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Subject:
2019 Annual Summary Report - System Operation and Monitoring, Bethpage
Park Groundwater Containment System (BPGWCS), Operable Unit 3 (Former
Grumman Settling Ponds), Bethpage, New York, NYSDEC Site
#1-30-003A.

ENVIRONMENT

Date:
March 30, 2020

Dear Jason:

Contact:
Christopher Engler

Enclosed is one electronic PDF copy of the 2019 Annual Summary Report for the
BPGWCS operation and monitoring, performed in accordance with the NYSDEC-
approved OU3 Groundwater IRM OM&M Manual (Arcadis 2009) and the
NYSDEC-approved Sampling and Analysis Plan (SAP; Arcadis 2009). As we
have transitioned to electronic submittals (via PDF) in line with NYSDEC's paper
reduction program, hard copies of the report can be provided on request.

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If you have any questions, please do not hesitate to contact me.

Our ref:
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Sincerely,

Arcadis of New York, Inc.



Christopher Engler, PE
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Enclosure

Mr. Jason Pelton
March 30, 2020

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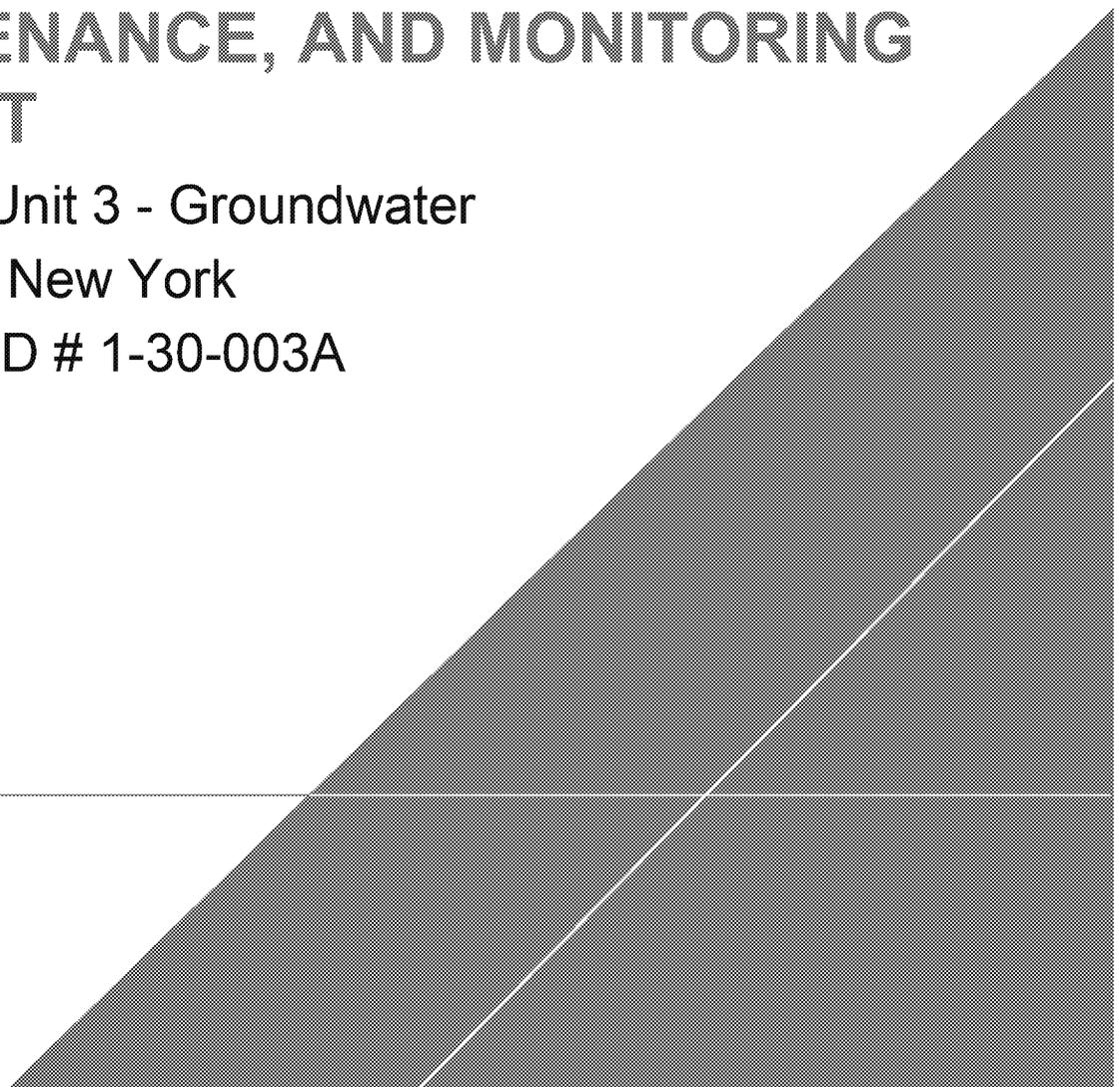
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2019 ANNUAL OPERATION, MAINTENANCE, AND MONITORING REPORT

Operable Unit 3 - Groundwater
Bethpage, New York
NYSDEC ID # 1-30-003A

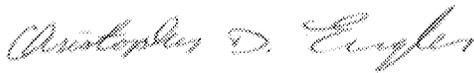
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2019 ANNUAL OPERATION, MAINTENANCE, AND MONITORING REPORT
Operable Unit 3 – Groundwater Containment System
Bethpage, New York
NYSDEC ID # 1-30-003A



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2019 ANNUAL OPERATION, MAINTENANCE AND MONITORING REPORT

Operable Unit 3 - Groundwater
Containment System Bethpage, New
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NYSDEC ID # 1-30-003A

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- Appendix A Well Construction Information and Environmental Effectiveness Monitoring Program
- Appendix B Compliance and Performance Program

1 INTRODUCTION

Pursuant to the Administrative Order on Consent (AOC) Index #W1-0018-04-01 (New York State Department of Environmental Conservation [NYSDEC] 2005) and the Operable Unit 3 (OU3) Record of Decision (NYSDEC 2013), Arcadis of New York, Inc. (Arcadis), on behalf of Northrop Grumman Systems Corporation (Northrop Grumman), has prepared this OU3 Bethpage Park Groundwater Containment System (BPGWCS) Annual Summary Report for submittal to the NYSDEC. The present-day Bethpage Community Park property (Park), the McKay Field, and Plant 24 Access Road, which the NYSDEC has termed the “Former Grumman Settling Ponds Area” and designated as OU3, are referred to herein as the Site Area. Figure 1 provides a Site Area location map.

The BPGWCS (previously referred to as the Groundwater Interim Remedial Measure) has been operational since July 21, 2009. The operation, maintenance, and monitoring (OM&M) activities performed during 2019 (i.e., January 1 through December 31, 2019 [the “annual reporting period”]) are summarized in this Annual Summary Report. This report also describes the Operation, Maintenance, and Monitoring (OM&M) activities performed during the Fourth Quarter of 2019 (i.e., October 1 through December 31, 2019 [the “Fourth Quarter”]). Data summaries for the previous three 2019 quarterly operational periods are available in the following letter reports:

- Results of First Quarter 2019 System Operation and Monitoring for the Bethpage Park Groundwater Containment System, May 2019 (Arcadis 2019a)
- Results of Second Quarter 2019 System Operation and Monitoring for the Bethpage Park Groundwater Containment System, August 2019 (Arcadis 2019b)
- Results of Third Quarter 2019 System Operation and Monitoring for the Bethpage Park Groundwater Containment System, November 2019 (Arcadis 2019c)

During the annual reporting period, the BPGWCS Remedial System and Environmental Effectiveness Monitoring Programs were conducted in accordance with the OU3 Groundwater Interim Operation, Maintenance, and Monitoring Manual (OM&M Manual; Arcadis 2016).

As discussed in the OU3 Site Area Remedial Investigation Report (Site Area RI) (Arcadis 2011), Northrop Grumman does not take responsibility for certain compounds (e.g., Freon 12 and Freon 22) present in Site Area groundwater. Throughout this Annual Report, a distinction is made between “Project” and “Non-Project” volatile organic compounds (VOCs), defined as follows:

- Project VOCs: VOCs that may be related to former Northrop Grumman historical activities. For this OM&M Report, Project VOCs include 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethylene (TCE); vinyl chloride (VC); cis-1,2-dichloroethene (cis-1,2-DCE); trans-1,2-dichloroethene (trans-1,2-DCE); benzene; toluene; xylene-O, and xylenes-M,P.
- Non-Project VOCs: VOCs, such as Freon 12 and Freon 22, that are understood to be unrelated to former Northrop Grumman activities but have been detected in Site Area groundwater. As noted in the Site Area RI (Arcadis 2011), a sub-plume of Freon 22 has been identified originating from the area of the Town of Oyster Bay's (Town's) former ice rink. Based on Town information (Zervos 2007), Freon 22 was used by the Town and released to the environment.

2 BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM OBJECTIVES

Remedial action objectives (RAOs) for the BPGWCS are as follows:

- Mitigate the off-site migration of dissolved-phase VOCs. Specifically, the BPGWCS addresses:
 - Groundwater that has total VOC concentrations greater than 5 micrograms per liter ($\mu\text{g/L}$) in the upper 20 feet of the surficial aquifer across the 1,200-foot-wide lateral extent of the Site Area southern boundary.
 - Groundwater below the upper 20 feet of the surficial aquifer that has total VOC concentrations greater than 50 $\mu\text{g/L}$ across the 1,200-foot-wide lateral extent of the Site Area southern boundary.
- Comply with applicable NYSDEC standards, criteria, and guidance values (SCGs) for treated water and air emissions.

A secondary benefit of the BPGWCS is the creation of a clean-waterfront atop downgradient groundwater, which minimizes the potential for vapor intrusion downgradient of the Site Area.

3 BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM DESCRIPTION

The BPGWCS consists of:

- A pump-and-treat system where groundwater is:
 - Extracted along the Plant 24 Access Road via four remedial wells.
 - Conveyed to a treatment plant at McKay Field via four underground pipelines.
 - Treated via air stripping to reduce concentrations of Project and Non-Project VOCs to comply with applicable NYSDEC SCGs for treated water.
 - Filtered to remove oxidized metals to comply with applicable NYSDEC SCGs for treated water.
 - Returned to the aquifer via a discharge pipeline routed to a recharge basin located on the adjacent former Bethpage Navy Weapons Industrial Reserve Plant property.
- A vapor-phase treatment system that reduces concentrations of Project VOCs in the air stripper off-gas prior to discharge to the atmosphere.
- A groundwater monitoring network utilized to periodically assess the environmental effectiveness of the BPGWCS.

Major components of the BPGWCS are as follows:

- Four remedial wells (RW-1, RW-2, RW-3, and RW-4) with design pumping rates of 30 gallons per minute (gpm), 75 gpm, 75 gpm, and 30 gpm, respectively; for a total design influent flow rate of 210 gpm.
- One low-profile air stripper to remove VOCs from extracted groundwater prior to discharge to the recharge basins.
- Two bag filter units configured so that one is operational and the other is in standby mode. The system control logic automatically switches from the operational filter unit to the standby filter unit when the bag filter is full to prevent a system shutdown and the spent filters are then replaced.
- Four emission control units, two containing vapor-phase granular-activated carbon and two containing potassium permanganate-impregnated zeolite, to treat Project VOCs in the air stripper off-gas.
- A groundwater monitoring network, consisting of 35 monitoring locations, including 23 groundwater monitoring wells, four remedial wells, and 20 piezometers.

The latest version of the OM&M Manual (Arcadis 2016) provides additional information on the BPGWCS. Figure 2 shows the layout of the BPGWCS, and Figure 3 provides a schematic drawing of the remedial systems. Figure 4 shows groundwater sampling locations that form the groundwater monitoring network. Appendix A provides construction details for the monitoring wells and piezometers.

4 OPERATION AND MAINTENANCE ACTIVITIES

4.1 Annual System Performance and Alarm Summary

The 2019 system operational up-time is provided on Table 1 and summarized below. System shutdowns that occurred in 2019 are summarized below.

In 2019:

- The system operated 355 out of 365 days (97% uptime), up from 95% runtime observed in 2018.
- The remedial wells operated at reduced flow rates during portions of the year due to pump wear, which is attributed to iron build-up in the pumps, influent pipelines and valves. The reduced flow rates were corrected by adjusting the manifold globe valves or through the performance of periodic system maintenance (i.e. pulling and replacing the remedial well pumps and valve cleaning).
- There were thirty-seven (37) routine system shutdowns (less than 12 hours each) due to alarm conditions encountered during normal operation of the system. Alarms in this category were responded to and troubleshooting was completed to restart the system within the same day (less than 12 hours).
- The following four (4) non-routine system shutdowns resulted in downtime for greater than 12 hours each, of which:

- One (1) shutdown was to accommodate replacement of valves and fittings on January 22nd, 2019.
- One (1) shutdown was due to failed PLC power supply on July 17th, 2019. The system was brought back online July 18th, 2019.
- One (1) Alarm reset error caused system shutdown on November 14th, 2019 prevented system restart until November 18th, 2019.
- One (1) shutdown was due to a broken blower fan on December 29th, 2019. Repair and system was restart completed on 1/10/20.

There were approximately 26 days of reduced flow, which was due to unforeseen RW-2 motor and pump overload conditions associated with iron build-up. Generally, the system was restarted without incident the same day or the day following routine alarms. OM&M activities were conducted in accordance with the OU3 Groundwater OM&M Manual.

5 SYSTEM MONITORING ACTIVITIES

5.1 2019 System Monitoring Activities

The following compliance and performance monitoring activities were conducted during the annual reporting period (see Appendix B, Appendix B-1 for a summary of the compliance and performance monitoring program requirements):

- Twelve (12) sampling events to collect twelve (12) required water samples and four (4) air samples;
- Forty-five (45) weekly site visits to monitor and record key system operational parameters.

System O&M results for the annual reporting period are summarized in the following tables and figures:

- Operational Summary, including monitoring events, system operational days, and noteworthy site activities (Table 1);
- Summary of Influent and Effluent Water Sample Analytical Results (Tables 2 and 3, respectively) - Table 3 also provides the BPGWCS treatment system removal efficiency;
- Summary of Influent and Effluent Vapor Sample Analytical Results and Summary of Effluent Vapor Tentatively Identified Compounds (Tables 4, 5 and 6, respectively) - Table 5 also provides the BPGWCS treatment system removal efficiency;
- Summary of System Parameters, including flow rates, line pressures, and temperatures (Table 7);
- Summary of Groundwater Recovered, VOC Mass Recovered, and VOC Mass Recovery Rates (Table 8) - Table 8 provides a breakdown of these parameters by Remedial Well and System and breaks down the VOC mass recovered and VOC recovery rates into Project, Non-Project, and total VOCs;
- Cumulative Total, Project, and Non-Project VOC Mass Removed (Figure 5);

- Remedial Well Total, Project, and Non-Project VOC Concentrations (Figures 6A, 6B, and 6C, respectively);
- Influent Total, Project, and Non-Project VOC Concentrations (Figure 7); and,
- Total, Project, and Non-Project VOC Mass Recovery Rates (Figures 8A, 8B, and 8C, respectively).

5.2 Summary of Monitoring Results and Conclusions

5.2.1 System Operation and Effectiveness

Annual BPGWCS monitoring results and conclusions are summarized below:

- Total volume of groundwater recovered and treated (Table 8):
 - 2019 Annual Total: 101 million gallons
 - Cumulative total since system startup: 1 billion and 69 million gallons
- Total VOC mass recovered (Table 8 and Figure 8A):
 - 2019 Annual Total: 12.88 lbs of VOCs
 - Cumulative total since system startup: 2,200 lbs of VOCs
- VOC mass recovered and mass removal rates (Table 8 and Figures 8A, 8B, and 8C):
 - The majority of VOCs recovered during the annual reporting period were Project VOCs (98 percent or 12.59 lbs).
 - Majority of Project VOCs are recovered by RW-2 (89 percent or 11.51 lbs) and RW-3 (8 percent or 1.07 lbs)
 - Majority Non-Project VOCs are recovered by RW-3 (62 percent or 0.29 lbs) and RW-4 (38 percent or 0.18 lbs).
- Treatment system influent concentrations (Tables 2, and Figures 6A, 6B, 6C, and 7):
 - Total Project VOC influent concentrations, which ranged from 8.9 µg/L in June to 13.7 µg/L in March during the annual reporting period, is consistent with historical values. Project VOC influent concentrations are generally stable over the annual reporting period. These concentrations are below the peak concentration observed in 2014 (105 µg/L). Project VOC influent concentrations have generally decreased since 2010.
 - Total Non-Project VOC influent concentrations were not detected during the annual reporting period.
 - Total iron (147.75 µg/L) was detected during the annual reporting period, which is consistent with historical values.
 - Mercury has not been detected in any influent or effluent sample since system startup. Sample collection for mercury analysis has therefore been deemed unnecessary.

- Project VOCs in Remedial Well, RW-1 (Table 10) were not detected during the annual reporting period.
 - In RW-2, several Project VOCs (cis-1,2-DCE, TCE, and VC) continue to be detected above applicable SCGs, but the detections remained stable or have decreased in concentration during the annual reporting period.
 - In RW-3, some Project VOCs (cis-1,2-DCE and TCE) were detected during all quarters, but the detections were below the applicable SCGs.
 - In RW-4, one Project VOC (TCE) was detected in the fourth quarter, but the detection was below the applicable SCG and none were detected during the first, second, and third quarter.
 - RW-2 Project VOCs have decreased from the peak total concentration observed at system startup in July 2009 (3858 µg/L) to the most recent low of 38.1 µg/L in September 2019.
 - Similar to total influent concentrations, Project VOC remedial well concentrations have generally decreased since 2010, with Project VOCs not detected above applicable SCGs in Remedial Well RW-3 since November 2013, and no detections in RW-1 since system startup.
- Non-Project VOCs in Remedial Wells RW-1, RW-2, RW-3 and RW-4 (Table 10) were not detected above applicable SCGs during 2019. Similar to total influent concentrations, Non-Project VOC remedial well concentrations have generally decreased during the annual reporting period and since 2010, with Non-Project VOCs not detected above applicable SCGs in Remedial Wells RW-1, RW-2, or RW-4 since system startup. Only two detections of Non-Project VOCs have been above applicable SCGs in RW-3 since system startup.
- The air stripper, air stripper off-gas treatment system, and bag filter system performed within acceptable operating ranges during the annual reporting period, as indicated by:
 - The air stripper VOC removal efficiency was greater than 99.9 percent for Project and Non-Project VOCs (Table 3).
 - Both water and air discharges complied with applicable SCGs and discharge limits (Tables 3, and 9).

5.2.2 Regulatory Status of Discharges

5.2.2.1 Air Discharge

Influent concentrations for the annual reporting period were compared to 6NYCRR III A Part 212-2.3(b) (Rule 212), Table 4 - Degree of Air Cleaning Required for Non-Criteria Air Contaminants. Concentrations of all effluent compounds detected during the Fourth Quarter were less than 16,959 µg/m³ (concentration equivalent to 0.1 pounds per hour at a flow rate of 1,577 standard cubic feet per minute), as shown in Table 9 of this report. Therefore, in accordance with the requirements of Table 4 of the NYSDEC regulations, air dispersion modeling was performed to demonstrate that the maximum off-site air concentration is less than the NYSDEC Division of Air Resources (DAR-1) Annual Guidance

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Concentrations (AGCs) on a 12-month rolling average and Short-term Guidance Concentrations (SGCs), issued August 10, 2016 (NYSDEC 2016).

Effluent concentrations for the annual period are provided on Table 5. The U.S. Environmental Protection Agency (USEPA) air quality dispersion model AERMOD was executed to estimate the highest ambient air concentration of the compounds on Table 5. AERMOD is the USEPA's recommended best state-of-the-art practice Gaussian plume dispersion model. Gaussian models are the most widely used techniques for estimating the impact of non-reactive pollutants, per Appendix W of Title 40 Code of Federal Regulations (CFR) 51 – Guideline of Air Quality Models.

The following parameters were used for the AERMOD model analysis:

- Urban dispersion coefficients
- AERMAP base and terrain elevations, processed using National Elevation Dataset (NED) digitized terrain data
- Surface and upper air observations measured at the Nation Weather Service stations located at Farmingdale and Brookhaven airports for calendar years 2011-2015, in accordance with NYSDEC's DAR-1 Air Dispersion Modeling Guidance Document. This longer period of time was reviewed for the model run, to provide a conservative estimate of atmospheric impacts on the off-site concentrations.
- Discrete receptor grids, per the following methodology:
 - Receptors were located along the property boundary at distances not exceeding 25 meters;
 - A 1.5 km x 1.5 km Cartesian grid receptors with distances of 50 meters between the receptors; and
 - A 3.0 km x 3.0 km Cartesian grid receptors with distances of 100 meters between the receptors.
- Emission rate: 1 gram per second (g/s).

Table 9 provides the compound specific scaled hourly ambient air impact and the scaled annual ambient air impact for the Fourth Quarter sampling event. Based on the model, the maximum one-hour ambient air impact was 3,153.03 [$\mu\text{g}/\text{m}^3$]/[g/s] and the maximum annual ambient air impact was 96.49 [$\mu\text{g}/\text{m}^3$]/[g/s]. As shown, the scaled ambient air impacts for the BPGWCS are below the corresponding SGCs and AGCs, which is consistent with the previous quarterly results during the annual reporting period.

Based on the ambient modeling analysis, the BPGWCS effluent air discharge for the annual reporting period meets the requirements for DAR-1 and is below the Rule 212 requirements.

5.2.2.2 Water Discharge

The BPGWCS-treated water effluent met NYSDEC regulatory requirements during the annual reporting period (Table 3 and Appendix B), as noted below:

- The measured concentration of individual VOCs in the treated water effluent were below applicable discharge limits, per the interim State Pollutant Discharge Elimination System (SPDES) equivalency permit.
- The measured concentration of total and dissolved iron in the treated water effluent were below applicable SPDES discharge limits.

6 ENVIRONMENTAL EFFECTIVENESS MONITORING

The OU3 BPGWCS System environmental effectiveness (i.e., hydraulic monitoring and groundwater quality monitoring) activities and results for the annual reporting period are discussed below.

6.1 Hydraulic Monitoring

6.1.1 Activities

In accordance with OM&M Manual requirements and methodologies (Arcadis 2016), groundwater hydraulic monitoring was performed quarterly during the annual reporting period. Specifically, depth-to-water measurements were completed on February 8, May 30, July 2 and November 25, 2019, at the 43 locations forming the approved monitoring well network (Figure 4). Table 11 summarizes results of depth-to-water measurements to date.

6.1.2 Results

Figure 9 provides the configuration of the shallow potentiometric surface and the inferred horizontal groundwater flow directions on July 2, 2019 at the Site Area. Comparing third quarter water-level elevations from 2019 to those from 2018 reveal that the water table was approximately one-foot higher at the time water level elevations were recorded in 2019 as compared to 2018.

Groundwater hydraulic monitoring is conducted quarterly however, the shallow potentiometric surface is mapped for only one quarter yearly as the rise and fall of this surface seasonally, due to recharge, has a negligible effect on the capture zone. As Figure 9 shows, groundwater flow in the area is generally toward

the south/south east. The BPGWCS system is capturing groundwater flow from the Bethpage Community Park. The southern edge of the capture zone extends to just south of Monitoring Wells MW-201-1 thru MW-203-1. The groundwater divide is slightly south of Sycamore Avenue, north of MW-207A-1R/MW-207B-1R and MW-208-1.

Figure 10 provides a cross-sectional view of vertical groundwater flow (based on groundwater levels measured on July 2, 2019), and Project VOC concentrations in groundwater (based on results from the July 2019 groundwater sampling round [3rd Quarter]). Figure 10 indicates groundwater containing Project VOCs is being captured and removed by remedial wells RW-1 through RW-4, which is consistent with the intended purpose of the OU3 BPGWCS System.

Figure 9 in combination with Figure 10 indicate that the OU 3 BPGWCS System provides effective vertical and horizontal hydraulic control of groundwater containing Project VOCs and prevents its movement offsite.

6.2 Groundwater Quality Monitoring

6.2.1 Activities

An annual groundwater sampling round was performed in July 2019 as part of site-wide sampling activity. Groundwater samples were collected from 19 monitoring wells that are specified for sampling in the OU3 OM&M Manual (Arcadis 2016).

An Initial Hydraulic Effectiveness Evaluation (HEE) of the OU3 BPGWCS System was performed in 2014-2015 (ERM 2015). As part of this HEE, a total of 6 monitoring wells and 6 piezometers were installed. Groundwater samples were also collected during this annual round from 4 of the monitoring wells installed during the Initial HEE (i.e., MW-204-1, MW-205-1, MW-206-1 and MW-208-1). Monitoring Wells MW-207A and MW-207B, installed during the Initial HEE, were assessed and found to be unusable in 2017. Therefore, monitoring wells MW-207A and MW-207B were replaced by MW-207A-1R and MW-207B-1R in 2018 as part of a Supplemental HEE conducted in 2018. Sampling results are presented in the Supplemental HEE report (EMAGIN 2018).

6.2.2 Results

Groundwater samples collected from the 17 monitoring wells were analyzed for Target Compound List (TCL) VOCs, plus Freon 12 and Freon 22, using USEPA Method 8260C, 1,4-Dioxane using USEPA Method 8270D SIM and total (unfiltered) and dissolved (filtered) metals (cadmium and chromium) using USEPA Method 6010.

Groundwater quality data, including historical results to date, are summarized in Table 12 (for VOCs and 1,4-Dioxane) and Table 13 (for metals).

6.3 Environmental Effectiveness Monitoring Conclusions

As discussed above, Figures 9 and 10 indicate that the OU3 BPGWCS System is operating as designed, that the expected associated capture zone has developed, and that off-site migration of groundwater containing Project VOCs is being prevented. This observation is also supported by NYDEC letter dated

March 18, 2016 states “that the OU3 groundwater treatment system is, overall, containing the OU3 groundwater plume source”.

NYSDEC Technical Memorandum (November 28, 2018) requested Toluene be included on the analyte analyzed for in all groundwater samples. As shown in Table 13, Toluene has not been identified at concentrations above detection limits (i.e. 1.0 ppb).

In summary, the Initial and Supplemental HEEs collectively confirmed the effectiveness of the OU3 BPGWCS System in preventing VOC impacted groundwater from migrating offsite. Groundwater monitoring results presented in Figure 9 and Figure 10 also confirm that the OU3 BPGWCS System is effectively controlling shallow Project VOCs in groundwater.

7 RECOMMENDATIONS

Based on the results of the Initial and Supplemental HEEs and the groundwater analytical results collected during the annual reporting period, Arcadis recommends continued operation of the OU3 BPGWCS System as is.

8 REFERENCES

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2019 ANNUAL OPERATION, MAINTENANCE, AND MONITORING REPORT
Operable Unit 3 – Groundwater Containment System
Bethpage, New York
NYSDEC ID # 1-30-003A

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TABLES



Table 1
Operational Summary
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

Notes:

1. Days the system was operational for the majority of the day are counted as one day.

Fourth Quarter 2019

2. Alarm reset error prevented system restart.
3. System shutdown due to broken fan on blower, repair and system restart completed 1/10/20.

Abbreviations/Units:

4Q Fourth Quarter

Table 2
 Summary of Influent Water Sample Analytical Results
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound | 03/01/19 (µg/L) | 06/07/19 (µg/L) | 09/06/19 (µg/L) | 11/05/19 (µg/L) |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|
| Project VOCs | | | | |
| 1,1,1 - Trichloroethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1 - Dichloroethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2 - Dichloroethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1 - Dichloroethene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 3.1 | 2.4 | 3.0 | 3.6 |
| Vinyl Chloride | 2.7 | 1.6 | 1.8 | 1.3 |
| cis 1,2-Dichloroethene | 7.9 | 4.9 | 5.7 | 6.0 |
| trans 1,2-Dichloroethene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Benzene | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Toluene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Subtotal Project VOCs | 13.7 | 8.9 | 10.5 | 10.9 |
| Non-Project VOCs | | | | |
| 1,1,2,2-Tetrachloroethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | < 10 | < 10 | < 10 | < 10 |
| 4-Methyl-2-Pentanone | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | < 10 | < 10 | < 10 | < 10 |
| Bromodichloromethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

Abbreviations, Notes, Qualifiers, and Units on last page.

Table 2
 Summary of Influent Water Sample Analytical Results
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound | 03/01/19 (µg/L) | 06/07/19 (µg/L) | 09/06/19 (µg/L) | 11/05/19 (µg/L) |
|--|--------------------|--------------------|--------------------|--------------------|
| Non-Project VOCs | | | | |
| Dichlorodifluoromethane (Freon 12) | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Dichloromethane | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl N-Butyl Ketone | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Methyl Tert-Butyl Ether | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Styrene (Monomer) | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorofluoromethane (Freon 11) | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Trichlorotrifluoroethane (Freon 113) | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 1-Chloro-1,1-difluoroethane (Freon 142b) | -- | < 5.0 | < 5.0 | < 5.0 |
| Subtotal Non-Project VOCs | 0.0 | 0.0 | 0.0 | 0.0 |
| Total VOCs¹ | 13.7 | 8.9 | 10.5 | 10.9 |
| 1,4-Dioxane | 0.80 | 0.33 | 0.70 | 0.71 |
| Compound | 03/01/19 (µg/L) | 06/07/19 (µg/L) | 09/06/19 (µg/L) | 11/05/19 (µg/L) |
| Inorganics | | | | |
| Total Iron | 204 | -- | -- | -- |
| Total Manganese | 47.7 | -- | -- | -- |
| pH ² | 5.5 | 5.3 | 5.5 | 5.5 |

Abbreviations, Notes, Qualifiers, and Units:

-- Not Analyzed

USEPA United States Environmental Protection Agency

VOC Volatile Organic Compound

1. "Total VOCs" represents the sum of individual concentrations of the compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

2. Influent pH samples collected and measured in the field by Arcadis personnel on the dates listed using a field calibrated pH/conductivity meter. pH units are standard units.

3.0 Bold value indicates a detection.

< 1.0 Compound not detected at or above the laboratory quantification limit.

µg/L micrograms per liter

Table 3
 Summary of Effluent Water Sample Analytical Results
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound | Discharge Limit ¹ (µg/L) | 01/10/19 (µg/L) | 02/05/19 (µg/L) | 03/01/19 (µg/L) | 04/02/19 (µg/L) | 05/15/19 (µg/L) | 06/07/19 (µg/L) | 07/02/19 (µg/L) | 08/02/19 (µg/L) | 09/06/19 (µg/L) | 10/15/19 (µg/L) | 11/05/19 (µg/L) | 12/04/19 (µg/L) |
|--------------------------------------|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Project VOCs | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Vinyl Chloride | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis 1,2-Dichloroethene | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans 1,2-Dichloroethene | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Subtotal Project VOCs | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Compound | Discharge Limit ¹ (µg/L) | 01/10/19 (µg/L) | 02/05/19 (µg/L) | 03/01/19 (µg/L) | 04/02/19 (µg/L) | 05/15/19 (µg/L) | 06/07/19 (µg/L) | 07/02/19 (µg/L) | 08/02/19 (µg/L) | 09/06/19 (µg/L) | 10/15/19 (µg/L) | 11/05/19 (µg/L) | 12/04/19 (µg/L) |
| Non-Project VOCs | | | | | | | | | | | | | |
| Chloroform | 5 ² | <0.50 | <0.50 | <0.50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichloromethane | 5 ² | <0.50 | <0.50 | <0.50 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 ² | <0.50 | <0.50 | <0.50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Subtotal Non-Project VOCs | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total VOCs³ | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Treatment Efficiency ⁴ | | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% | > 99.9% |
| Compound | Discharge Limit ¹ (µg/L) | 01/10/19 (µg/L) | 02/05/19 (µg/L) | 03/01/19 (µg/L) | 04/02/19 (µg/L) | 05/15/19 (µg/L) | 06/07/19 (µg/L) | 07/02/19 (µg/L) | 08/02/19 (µg/L) | 09/06/19 (µg/L) | 10/15/19 (µg/L) | 11/05/19 (µg/L) | 12/04/19 (µg/L) |
| Inorganics | | | | | | | | | | | | | |
| Dissolved Cadmium | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cadmium | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Chromium | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chromium | 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Iron | 600 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Iron | 600 | 120 | 179 | 204 | < 100 | 126 | < 100 | 102 | 133 | 133 | 201 | 110 | < 100 |
| Total Mercury | 250 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | 600 | 52.4 | 51.2 | 47.7 | 44.2 | 47.3 | 45.2 | 49.4 | 50.1 | 51.2 | 46.1 | 47.6 | 43.1 |
| Nitrate and Nitrite | 10,000 | 2,700 | 2,800 | 2,500 | 2,700 | 2,500 | 2,300 | 2,500 | 2,500 | 2,700 | 2,700 | 2,700 | 2,900 |
| Total Kjeldahl Nitrogen | 10,000 | < 200 | < 201 | 450.0 | < 200 | < 200 | < 200 | < 200 | < 200 | 310.0 | < 200 | < 200 | < 200 |
| Total Nitrogen | 10,000 | 2,700 | 2,800 | 3,000 | 2,800 | 2,700 | 2,300 | 2,500 | 2,500 | 3,000 | 2,700 | 2,900 | 3,100 |
| 1,4-Dioxane | NE | 0.73 | 1.10 | 0.76 | 0.61 | 0.74 | 0.61 | 0.68 | 0.34 | 0.71 | 0.70 | 0.68 | 0.87 |
| pH ⁵ | 5.5-8.5 | 6.9 | 7.0 | 6.6 | 6.8 | 6.6 | 6.7 | 7.0 | 6.7 | 6.7 | 6.2 | 6.3 | 6.8 |

Abbreviations, Notes, Qualifiers, and Units on last page.

Table 3
Summary of Effluent Water Sample Analytical Results
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

Abbreviations, Notes, Qualifiers, and Units:

-- Not Analyzed
NYSDEC New York State Department of Environmental Conservation
SPDES State Pollutant Discharge Elimination System
USEPA United States Environmental Protection Agency
VOC Volatile Organic Compound

1. Discharge limits per the interim SPDES equivalency program or Division of Water Technical and Operational Guidance Series (TOGS 1.1.1) Quality Standards and Guidance Values and Groundwater Effluent Limitations, if the compound is not part of the SPDES Permit Equivalency.
2. As of September 2017, the 10 SPDES VOCs discharge limits are per Site Number 1-30-003A Operable Unit 3 SPDES Permit Equivalency.
3. "Total VOCs" represents the sum of individual concentrations of compounds detected. The values used in calculations referenced in this report have been rounded to the
4. Treatment efficiency was calculated by dividing the difference between the influent and effluent total VOC concentrations by the influent total VOC concentration.
5. Effluent pH measured on site using a handheld pH meter. pH units are standard units.

102 Bold value indicates a detection.
< 0.50 Compound not detected above the laboratory quantification limit.
J Result is estimated.
µg/L micrograms per liter

Table 4
 Influent Vapor Sample Analytical Results
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound ¹ | 03/01/19 (µg/m ³) | 06/07/19 (µg/m ³) | 09/06/19 (µg/m ³) | 11/26/19 (µg/m ³) |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Project VOCs | | | | |
| 1,1,1 - Trichloroethane | 0.76 | 0.65 | 0.93 | 0.82 |
| 1,1 - Dichloroethane | 6.9 | 4.5 | 4.5 | 3.8 |
| 1,2 - Dichloroethane | < 0.65 | < 0.65 | < 0.81 | < 0.81 |
| 1,1 - Dichloroethene | 1.9 | 1.1 | 1.1 | 0.99 |
| Tetrachloroethene | 2.8 | 10 | 2.6 | 2.2 |
| Trichloroethene | 54 | 48 | 54.8 | 49 |
| Vinyl Chloride | 52.7 | 29.7 | 30.7 | 23.0 |
| cis 1,2-Dichloroethene | 165 | 103 | 103 | 108 |
| trans 1,2-Dichloroethene | 0.52 J | 0.34 J | < 0.79 | < 0.79 |
| Benzene | 0.93 | 0.64 | < 0.64 | 1.90 |
| Toluene | 0.87 | 0.57 J | 0.49 J | 2.30 |
| o-Xylene | 0.69 | 0.74 | 0.52 J | 0.78 J |
| m,p-Xylene | 0.74 | 0.48 J | < 0.87 | 1.7 |
| Subtotal Project VOCs | 289 | 200 | 193 | 194 |
| Non-Project VOCs | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.55 | < 0.55 | < 0.69 | < 0.69 |
| 1,1,2-Trichloroethane | < 0.44 | < 0.44 | < 0.55 | < 0.55 |
| 1,2-Dichloropropane | < 0.74 | < 0.74 | < 0.92 | < 0.92 |
| 1,3-Butadiene | < 0.35 | < 0.35 | < 0.44 | 0.42 J |
| 2-Butanone | 0.47 | 22 | 0.65 | < 0.59 |
| 4-Methyl-2-Pentanone | < 0.66 | < 0.66 | < 0.82 | < 0.82 |
| Acetone | 4.8 | 104 | 5.5 | 4.5 |
| Bromodichloromethane | < 0.54 | < 0.54 | < 0.67 | < 0.67 |
| Bromoform | < 0.33 | < 0.33 | < 0.41 | < 0.41 |
| Bromomethane | < 0.62 | 0.47 J | < 0.78 | < 0.78 |
| Carbon Disulfide | < 0.50 | < 0.50 | < 0.62 | < 0.62 |
| Carbon Tetrachloride | 0.42 | 0.43 | < 0.25 | < 0.25 |
| Chlorobenzene | < 0.74 | < 0.74 | < 0.92 | < 0.92 |
| Chlorodibromomethane | < 0.68 | < 0.68 | < 0.85 | < 0.85 |
| Chlorodifluoromethane (Freon 22) | 8.1 | 8.4 | 8.4 | 6.3 |
| Chloroethane | < 0.42 | < 0.42 | < 0.53 | < 0.53 |
| Chloroform | 6.3 | 7.3 | 7.8 | 7.3 |
| Chloromethane | 1.5 | 1.2 | 0.87 | 1.3 |
| cis-1,3-Dichloropropene | < 0.73 | < 0.73 | < 0.91 | < 0.91 |
| Dichlorodifluoromethane (Freon 12) | 1.9 | 2.2 | 2.2 | < 0.99 |
| Dichloromethane | 0.63 | < 0.56 | 0.94 | 4.2 |
| Ethylbenzene | < 0.69 | < 0.69 | < 0.87 | 0.65 J |
| Methyl N-Butyl Ketone | < 0.65 | 0.41 J | < 0.82 | < 0.82 |
| Methyl Tert-Butyl Ether | 0.50 J | < 0.58 | 0.43 J | < 0.72 |
| Styrene (Monomer) | < 0.68 | < 0.68 | < 0.85 | < 0.85 |
| trans-1,3-Dichloropropene | < 0.73 | < 0.73 | < 0.91 | < 0.91 |
| Trichlorofluoromethane (Freon 11) | 1.1 | 1.5 | 2.0 | 1.6 |
| Trichlorotrifluoroethane (Freon 113) | 1.8 | 2.1 | 1.8 | 1.5 |
| 1-Chloro-1,1-difluoroethane (Freon 142b) | < 0.66 | < 0.66 | < 0.82 | < 0.82 |
| Subtotal Non-Project VOCs | 28 | 150 | 20 | 28 |
| Total VOCs² | 317 | 350 | 213 | 222 |

Abbreviations, Notes, Qualifiers, and Units on last page.

Table 4
Influent Vapor Sample Analytical Results
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

Abbreviations, Notes, Qualifiers, and Units:

| | |
|--------|---|
| ELAP | Environmental Laboratory Approval Program |
| NYSDOH | New York State Department of Health |
| OM&M | Operation, Maintenance, and Monitoring |
| USEPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compound |

1. Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15. A VOC analyte list is provided in the DRAFT Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). Influent samples were collected at Vapor Sampling Port-1 (VSP-1); refer to Figure 3 of this OM&M Report for the location of VSP-1.

2. "Total VOCs" represents the sum of individual concentrations of compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

| | |
|-------------------|--|
| 0.93 | Bold value indicates a detection. |
| < 0.81 | Compound not detected above the laboratory quantification limit. |
| J | Result is estimated. |
| µg/m ³ | micrograms per cubic meter |

Table 5
 Summary of Effluent Vapor Sample Analytical Results
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound ¹ | 03/01/19 (µg/m ³) | 06/07/19 (µg/m ³) | 09/06/19 (µg/m ³) | 11/26/19 (µg/m ³) |
|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Project VOCs | | | | |
| 1,1,1 - Trichloroethane | 0.65 | 0.82 | 0.76 | 0.82 |
| 1,1 - Dichloroethane | 6.5 | 5.7 | 4.5 | 4.5 |
| 1,2 - Dichloroethane | < 0.65 | 0.28 J | < 0.81 | < 0.81 |
| 1,1 - Dichloroethene | 1.6 | 0.95 | 0.87 | 0.99 |
| Tetrachloroethene | 1.9 | 43 | 1.9 | 1.8 |
| Trichloroethene | 30 | 22 | 26 | 31 |
| Vinyl Chloride | 34.5 | 13 | 15.0 | 16 |
| cis 1,2-Dichloroethene | 114 | 65.0 | 65.8 | 85.6 |
| trans 1,2-Dichloroethene | < 0.63 | < 0.63 | < 0.79 | < 0.79 |
| Benzene | 1.0 | 1.2 | < 0.64 | 1.5 |
| Toluene | 2.8 | 3.5 | 1.5 | 2.8 |
| o-Xylene | 0.69 | 0.43 J | < 0.87 | 0.61 J |
| m,p-Xylene | 1.0 | 0.43 J | < 0.87 | 1.4 |
| Subtotal Project VOCs | 195 | 156 | 116 | 147 |
| Non-Project VOCs | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.55 | < 0.56 | < 0.69 | < 0.69 |
| 1,1,2-Trichloroethane | < 0.44 | 3.3 | < 0.55 | < 0.55 |
| 1,2-Dichloropropane | < 0.74 | < 0.74 | < 0.92 | < 0.92 |
| 1,3-Butadiene | < 0.35 | < 0.35 | < 0.44 | < 0.44 |
| 2-Butanone | 14 | 26 | 1.8 | 4.7 |
| 4-Methyl-2-Pentanone | < 0.66 | < 0.66 | < 0.82 | < 0.82 |
| Acetone | 96.4 | 302 | 21 | 38.5 |
| Bromodichloromethane | < 0.54 | < 0.55 | < 0.67 | < 0.67 |
| Bromoform | < 0.33 | < 0.34 | < 0.41 | < 0.41 |
| Bromomethane | < 0.62 | < 0.62 | < 0.78 | < 0.78 |
| Carbon Disulfide | < 0.50 | < 0.50 | < 0.62 | < 0.62 |
| Carbon Tetrachloride | 0.33 | 0.34 | < 0.25 | < 0.25 |
| Chlorobenzene | 0.97 | < 0.74 | < 0.92 | < 0.92 |
| Chlorodibromomethane | < 0.68 | < 0.70 | < 0.85 | < 0.85 |
| Chlorodifluoromethane (Freon 22) | 8.8 | 8.4 | 8.4 | 7.7 |
| Chloroethane | < 0.42 | < 0.42 | < 0.53 | < 0.53 |
| Chloroform | 10 | 11 | 10 | 11 |
| Chloromethane | 1.5 | 1.5 | 0.85 | 1.3 |
| cis-1,3-Dichloropropene | < 0.73 | < 0.73 | < 0.91 | < 0.91 |
| Dichlorodifluoromethane (Freon 12) | 2.1 | 2.3 | 2.1 | < 0.99 |
| Dichloromethane | 0.66 | 0.56 | < 0.69 | < 0.69 |
| Ethylbenzene | < 0.69 | < 0.69 | < 0.87 | 0.48 J |
| Methyl N-Butyl Ketone | < 0.65 | < 0.65 | < 0.82 | < 0.82 |
| Methyl Tert-Butyl Ether | 0.36 J | < 0.58 | < 0.72 | < 0.72 |
| Styrene (Monomer) | < 0.68 | < 0.68 | < 0.85 | < 0.85 |
| trans-1,3-Dichloropropene | < 0.73 | < 0.73 | < 0.91 | < 0.91 |
| Trichlorofluoromethane (Freon 11) | 1.3 | 1.5 | 1.6 | 1.7 |
| Trichlorotrifluoroethane (Freon 113) | 2.5 | 2.5 | 2.1 | 2.0 |
| 1-Chloro-1,1-difluoroethane (Freon 142b) | < 0.66 | < 0.66 | < 0.82 | < 0.82 |
| Subtotal Non-Project VOCs | 139 | 359 | 39 | 67 |
| Total VOCs² | 334 | 516 | 156 | 214 |

Abbreviations, Notes, Qualifiers, and Units on last page.

Table 5
Summary of Effluent Vapor Sample Analytical Results
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

Abbreviations, Notes, Qualifiers, and Units:

ELAP Environmental Laboratory Approval Program
NYSDOH New York State Department of Health
OM&M Operation, Maintenance, and Monitoring
USEPA United States Environmental Protection Agency
VOC Volatile Organic Compound

1. Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15. A VOC analyte list is provided in the DRAFT Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). Effluent samples were collected at Vapor Sampling Port-5 (VSP-5); refer to Figure 3 of this OM&M Report for the location of VSP-5.
2. "Total VOCs" represents the sum of individual concentrations of all compounds detected. The values used in calculations referenced in this report have been rounded to the nearest whole number.

0.76 Bold value indicates a detection.
< 0.81 Compound not detected above the laboratory quantification limit.
J Result is estimated.
 $\mu\text{g}/\text{m}^3$ micrograms per cubic meter

Table 6
 Summary of Effluent Vapor Tentatively Identified Compounds
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound ^{1,2,3} | 03/01/19 (ppbv) | 06/07/19 (ppbv) | 09/06/19 (ppbv) | 11/26/19 (ppbv) |
|---|--------------------|--------------------|--------------------|--------------------|
| Tentatively Identified Compounds | | | | |
| 2-Ethyl-1-hexanol | 1.1 JN | ND | ND | ND |
| 2-Phenyl-2-propanol | 1.6 JN | 3.3 JN | ND | ND |
| Acetophenone | 1.3 JN | 2.1 JN | ND | ND |
| Alkane | 7.9 J | ND | ND | ND |
| Alkane | 4.4 J | ND | ND | ND |
| Alkane | ND | ND | ND | 3.3 J |
| C3 alkyl benzene | ND | 6.2 J | ND | 3.9 J |
| Carbon Dioxide | 170 JNB | 100 JNB | 220 JB | 29 JNB |
| Isopropylbenzene | 3.3 JN | ND | ND | ND |
| Unknown (A) | ND | 2.8 J | ND | ND |
| Unknown (B) | ND | ND | 3.3 J | ND |
| Total VOC TICs⁴ | 19.6 J | 14.4 J | 3.3 J | 7.2 J |

Abbreviations, Notes, Qualifiers, and Units:

| | |
|--------|---|
| ECU | Emission Control Unit |
| ELAP | Environmental Laboratory Approval Program |
| NYSDOH | New York State Department of Health |
| OM&M | Operation, Maintenance, and Monitoring |
| TIC | Tentatively Identified Compound |
| USEPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compound |

1. Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15. A VOC analyte list is provided in the DRAFT Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). Effluent samples were collected at Vapor Sampling Port-5 (VSP-5); refer to Figure 3 of this OM&M Report for the location of VSP-5.

2. The ECUs were placed in a parallel configuration on 3/1/2018 to test for performance gain.

3. VSP-5 sample location moved to new sample port at ECU effluent stack.

4. Compounds found in associated method blank are not included in Total VOC TICs.

3.3 Bold value indicates a detection.

ND TIC were not detected.

B TIC was detected in the associated method

J Result is estimated.
 Indicates presumptive

N evidence of a compound.

ppbv parts per billion by volume

Table 7
 Summary of System Parameters
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Date ¹ | Water Flow Rates | | | | | | Water Pressures | | | | | Air Flow Rate ² | Air Pressures ³ | | | | Air Temp. ⁵ | |
|-------------------|----------------------------|-------------------|-------|-------|--------------------------------|-----------------------|---------------------------------------|----------------|-------|-------|-----------------------|----------------------------|----------------------------|---------|---------|---------|------------------------|----------|
| | Remedial Well ² | | | | Combined Influent ¹ | Effluent ² | Remedial Well Effluent ^{2,4} | | | | Effluent ³ | Effluent | ECU Influent | | | | Effluent | Effluent |
| | RW-1 | RW-2 | RW-3 | RW-4 | | | RW-1 | RW-2 | RW-3 | RW-4 | | | GAC-501 | GAC-502 | PPZ-601 | PPZ-602 | | |
| | (gpm) | (gpm) | (gpm) | (gpm) | (gpm) | (gpm) | (psi) | (psi) | (psi) | (psi) | (psi) | (scfm) | (iwc) | (iwc) | (iwc) | (iwc) | (iwc) | (°R) |
| 01/10/19 | 30.4 | 69.8 | 80.2 | 30.7 | 211 | 221 | 54 | 6 | 33 | 54 | 12 | 1,581 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 530 |
| 02/05/19 | 30.9 | 75.6 | 76.0 | 30.7 | 213 | 223 | 54 | 67 | 47 | 55 | 14 | 1,607 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 535 |
| 03/01/19 | 30.5 | 75.0 | 75.9 | 30.3 | 212 | 220 | 55 | 30 | 47 | 56 | 12 | 1,695 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 528 |
| 04/02/19 | 30.6 | 59.6 | 75.2 | 30.2 | 196 | 205 | 54 | 5 | 37 | 56 | 12 | 1,692 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 532 |
| 05/15/19 | 30.3 | 64.8 | 76.5 | 30.0 | 202 | 211 | 55 | 6 | 44 | 56 | 12 | 1,698 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 534 |
| 06/07/19 | 30.4 | 53.0 ⁶ | 73.1 | 30.0 | 134 | 197 ⁶ | 56 | 5 ⁶ | 46 | 55 | 11 | 1,658 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 540 |
| 07/02/19 | 29.6 | 71.7 | 72.7 | 29.0 | 203 | 212 | 54 | 66 | 43 | 53 | 29 | 1,491 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 541 |
| 08/02/19 | 28.4 | 64.9 | 70.1 | 28.4 | 192 | 200 | 54 | 60 | 44 | 54 | 13 | 1,463 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 541 |
| 09/06/19 | 29.7 | 63.4 | 74.1 | 30.3 | 198 | 207 | 57 | 15 | 39 | 56 | 13 | 1,522 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 542 |
| 10/15/19 | 29.9 | 74.5 | 75.1 | 30.3 | 210 | 219 | 57 | 69 | 35 | 56 | 17 | 1,510 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 538 |
| 11/05/19 | 30.1 | 73.3 | 75.4 | 29.8 | 209 | 218 | 57 | 66 | 33 | 56 | 14 | 1,496 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 535 |
| 12/04/19 | 30.1 | 72.1 | 75.5 | 30.0 | 208 | 218 | 57 | 6 | 40 | 56 | 13 | 1,542 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 532 |

Abbreviations, Notes, and Units on last page.

Table 7
 Summary of System Parameters
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

Abbreviations, Notes, and Units:

| | |
|-------|--|
| ECU | Emission Control Unit |
| GAC | Granular Activated Carbon |
| HMI | Human-Machine Interface |
| RW | Remedial Well |
| SCADA | Supervisory Control and Data Acquisition |
| Temp | Temperature |

1. Operational data collected by Arcadis on days noted. Parameters listed were typically recorded during compliance monitoring events. Data in this table correspond to approximately the past year of system operation.
2. Instantaneous parameters obtained from the SCADA HMI: Water Flow Rate, Water Pressure, Air Flow Rate.
3. Combined influent water-flow rate is the sum of individual well flow rates via the SCADA System.
4. Remedial Well effluent pressure readings measured at the influent manifold within the treatment system building.
5. Instantaneous values recorded from field-mounted instruments during weekly site visits.
6. Due to a RW-2 pump failure on 6/07/19 after system sampling, the flow rate average was calculated using readings between midnight and the time of shutdown.

| | |
|------|--------------------------------|
| gpm | gallons per minute |
| iwc | inches of water column |
| psi | pounds per square inch |
| °R | degrees Rankine |
| scfm | standard cubic feet per minute |

Table 8
 Summary of Groundwater Recovered, VOC Mass Recovered, and VOC Mass Recovery Rates
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York



| Operating Period ¹ | Volume of Groundwater Recovered (x1,000 gal) ² | | | | | VOC Mass Recovered (lbs) ³ | | | | | | | | | | | | | | | VOC Mass Recovery Rate (lbs/day) ⁴ | | | | | | | | | | | | | | | | | | | |
|--|--|---------|---------|---------|-----------|---------------------------------------|-------|------|--------|-------|---------------------------|-------|-------|--------|-------|-------------------------------|--------|------|--------|-------|---|-------|--------|--------|-------|---------------------------|-------|--------|--------|-------|-------------------------------|--------|--------|--------|--------|------|------|------|------|-------|
| | | | | | | Total VOCs ⁵ | | | | | Project VOCs ⁶ | | | | | Non-Project VOCs ⁷ | | | | | Total VOCs ⁵ | | | | | Project VOCs ⁶ | | | | | Non-Project VOCs ⁷ | | | | | | | | | |
| | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total | RW-1 | RW-2 | RW-3 | RW-4 | Total |
| System Pilot Test, Shakedown and Startup Totals⁸ | 137 | 270 | 251 | 150 | 808 | NA | NA | NA | NA | 1.1 | NA | NA | NA | NA | 1.0 | NA | NA | NA | NA | 0.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2010 Totals | 15,726 | 35,127 | 38,160 | 15,689 | 104,702 | 0.56 | 172 | 412 | 89 | 672 | 0.56 | 171 | 28 | 0.10 | 200 | < 0.01 | 0.17 | 383 | 89 | 469 | < 0.01 | 0.46 | 1.1 | 0.24 | 1.8 | < 0.01 | 0.46 | 0.075 | < 0.01 | 0.54 | < 0.01 | < 0.01 | 1.0 | 0.24 | 1.3 | | | | | |
| 2011 Totals | 15,218 | 36,570 | 37,682 | 15,196 | 104,666 | 0.36 | 167 | 271 | 78 | 516 | 0.36 | 167 | 35 | 0.090 | 203 | < 0.01 | 1.1 | 236 | 78 | 314 | < 0.01 | 0.45 | 0.73 | 0.21 | 1.4 | < 0.01 | 0.45 | 0.095 | < 0.01 | 0.55 | < 0.01 | < 0.01 | 0.64 | 0.21 | 0.85 | | | | | |
| 2012 Totals | 15,260 | 35,178 | 36,111 | 15,336 | 101,885 | 0.28 | 114 | 113 | 40 | 267 | 0.25 | 113 | 12 | 0.39 | 126 | < 0.01 | 1.5 | 101 | 40 | 141 | < 0.01 | 0.31 | 0.31 | 0.11 | 0.73 | < 0.01 | 0.31 | 0.032 | < 0.01 | 0.35 | < 0.01 | < 0.01 | 0.28 | 0.11 | 0.39 | | | | | |
| 2013 Totals | 15,968 | 37,514 | 36,622 | 16,036 | 106,140 | 0.14 | 111 | 41 | 18 | 171 | 0.14 | 110 | 4.3 | 0.36 | 113 | < 0.01 | 1.6 | 37 | 18 | 57 | < 0.01 | 0.30 | 0.11 | 0.050 | 0.47 | < 0.01 | 0.30 | 0.012 | < 0.01 | 0.31 | < 0.01 | < 0.01 | 0.10 | 0.049 | 0.16 | | | | | |
| 2014 Totals | 15,690 | 33,222 | 31,199 | 15,691 | 95,802 | 0.063 | 67 | 9.9 | 8.1 | 85 | 0.063 | 65 | 2.0 | 0.20 | 67 | < 0.01 | 1.5 | 8.1 | 7.9 | 17 | < 0.01 | 0.19 | 0.028 | 0.023 | 0.24 | < 0.01 | 0.18 | < 0.01 | < 0.01 | 0.19 | < 0.01 | < 0.01 | 0.023 | 0.022 | 0.047 | | | | | |
| 2015 Totals | 15,859 | 38,082 | 34,961 | 14,755 | 103,657 | 0.028 | 47 | 7.1 | 4.5 | 57 | 0.021 | 45 | 1.5 | 0.20 | 45 | < 0.01 | 1.7 | 5.6 | 4.2 | 12 | < 0.01 | 0.13 | 0.019 | 0.012 | 0.16 | < 0.01 | 0.12 | < 0.01 | < 0.01 | 0.12 | < 0.01 | < 0.01 | 0.015 | 0.012 | 0.032 | | | | | |
| 2016 Totals | 15,826 | 34,539 | 39,349 | 15,826 | 105,540 | < 0.01 | 38 | 3.2 | 2.2 | 44 | < 0.01 | 37 | 1.4 | 0.20 | 39 | < 0.01 | 1.5 | 1.7 | 2.0 | 5.2 | < 0.01 | 0.10 | < 0.01 | < 0.01 | 0.12 | < 0.01 | 0.10 | < 0.01 | < 0.01 | 0.11 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | 0.014 | | | | | |
| 2017 Totals | 16,005 | 31,600 | 37,614 | 15,965 | 101,184 | < 0.01 | 13 | 2.2 | 1.2 | 17 | < 0.01 | 13 | 1.1 | 0.16 | 14 | < 0.01 | 0.56 | 1.1 | 1.1 | 2.7 | < 0.01 | 0.037 | < 0.01 | < 0.01 | 0.046 | < 0.01 | 0.035 | < 0.01 | < 0.01 | 0.038 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | | | | |
| 2018 Totals | 15,145 | 37,712 | 32,473 | 14,917 | 100,247 | < 0.01 | 13.71 | 0.90 | 0.56 | 15.2 | < 0.01 | 13.5 | 0.70 | < 0.01 | 14.2 | < 0.01 | 0.27 | 0.19 | 0.52 | 0.97 | < 0.01 | 0.038 | < 0.01 | < 0.01 | 0.042 | < 0.01 | 0.037 | < 0.01 | < 0.01 | 0.039 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | | | | |
| January 2019 through March 2019 Totals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01/01/19 - 02/01/19 | 1,322 | 1,656 | 3,433 | 1,319 | 7,730 | < 0.01 | 0.76 | 0.12 | 0.04 | 0.91 | < 0.01 | 0.8 | 0.094 | < 0.01 | 0.85 | < 0.01 | < 0.01 | 0.02 | 0.04 | 0.059 | < 0.01 | 0.025 | < 0.01 | 0.001 | 0.029 | < 0.01 | 0.025 | < 0.01 | < 0.01 | 0.028 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 02/01/19 - 03/01/19 | 1,231 | 3,013 | 3,031 | 1,206 | 8,481 | < 0.01 | 1.4 | 0.10 | 0.03 | 1.5 | < 0.01 | 1.4 | 0.083 | < 0.01 | 1.5 | < 0.01 | < 0.01 | 0.02 | 0.03 | 0.053 | < 0.01 | 0.049 | < 0.01 | 0.001 | 0.054 | < 0.01 | 0.049 | < 0.01 | < 0.01 | 0.052 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 03/01/19 - 04/01/19 | 1,318 | 2,789 | 3,264 | 1,305 | 8,675 | < 0.01 | 1.3 | 0.11 | 0.04 | 1.4 | < 0.01 | 1.3 | 0.090 | < 0.01 | 1.4 | < 0.01 | < 0.01 | 0.02 | 0.04 | 0.058 | < 0.01 | 0.041 | < 0.01 | 0.001 | 0.046 | < 0.01 | 0.041 | < 0.01 | < 0.01 | 0.044 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| Subtotal Jan - Mar 2019 | 3,870 | 7,458 | 9,727 | 3,830 | 24,885 | < 0.01 | 3.4 | 0.33 | 0.11 | 3.9 | < 0.01 | 3.4 | 0.27 | < 0.01 | 3.7 | < 0.01 | < 0.01 | 0.06 | 0.11 | 0.170 | < 0.01 | 0.038 | < 0.01 | 0.001 | 0.043 | < 0.01 | 0.038 | < 0.01 | < 0.01 | 0.041 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| April 2019 through June 2019 Totals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04/01/19 - 05/01/19 | 1,317 | 2,812 | 3,229 | 1,291 | 8,649 | < 0.01 | 0.93 | 0.13 | 0.04 | 1.09 | < 0.01 | 0.93 | 0.10 | < 0.01 | 1.03 | < 0.01 | < 0.01 | 0.02 | 0.04 | 0.066 | < 0.01 | 0.031 | < 0.01 | 0.001 | 0.036 | < 0.01 | 0.031 | < 0.01 | < 0.01 | 0.034 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 05/01/19 - 06/01/19 | 1,363 | 2,789 | 3,376 | 1,350 | 8,878 | < 0.01 | 0.92 | 0.13 | 0.04 | 1.09 | < 0.01 | 0.92 | 0.11 | < 0.01 | 1.0 | < 0.01 | < 0.01 | 0.02 | 0.05 | 0.069 | < 0.01 | 0.030 | < 0.01 | 0.001 | 0.035 | < 0.01 | 0.030 | < 0.01 | < 0.01 | 0.033 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 06/01/19 - 07/01/19 | 1,335 | 1,884 | 3,265 | 1,308 | 7,792 | < 0.01 | 0.62 | 0.13 | 0.04 | 0.79 | < 0.01 | 0.62 | 0.10 | < 0.01 | 0.72 | < 0.01 | < 0.01 | 0.02 | 0.04 | 0.068 | < 0.01 | 0.021 | < 0.01 | 0.001 | 0.026 | < 0.01 | 0.021 | < 0.01 | < 0.01 | 0.024 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| Subtotal Apr - June 2019 | 4,015 | 7,485 | 9,870 | 3,949 | 25,319 | < 0.01 | 2.47 | 0.38 | 0.11 | 2.96 | < 0.01 | 2.5 | 0.31 | < 0.01 | 2.8 | < 0.01 | < 0.01 | 0.07 | 0.13 | 0.203 | < 0.01 | 0.027 | < 0.01 | 0.001 | 0.033 | < 0.01 | 0.027 | < 0.01 | < 0.01 | 0.031 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| July 2019 through September 2019 Totals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07/01/19 - 08/01/19 | 1,296 | 3,140 | 3,183 | 1,272 | 8,891 | < 0.01 | 1.01 | 0.11 | < 0.01 | 1.12 | < 0.01 | 1.0 | 0.082 | < 0.01 | 1.09 | < 0.01 | < 0.01 | 0.02 | < 0.01 | 0.024 | < 0.01 | 0.033 | < 0.01 | < 0.01 | 0.036 | < 0.01 | 0.033 | < 0.01 | < 0.01 | 0.035 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | | | | |
| 08/01/19 - 09/01/19 | 1,314 | 3,013 | 3,236 | 1,313 | 8,876 | < 0.01 | 0.97 | 0.11 | < 0.01 | 1.08 | < 0.01 | 1.0 | 0.084 | < 0.01 | 1.1 | < 0.01 | < 0.01 | 0.03 | < 0.01 | 0.025 | < 0.01 | 0.031 | < 0.01 | < 0.01 | 0.035 | < 0.01 | 0.031 | < 0.01 | < 0.01 | 0.034 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | | | | |
| 09/01/19 - 10/01/19 | 1,287 | 2,712 | 3,197 | 1,310 | 8,506 | < 0.01 | 0.87 | 0.11 | < 0.01 | 0.98 | < 0.01 | 0.9 | 0.083 | < 0.01 | 1.0 | < 0.01 | < 0.01 | 0.02 | < 0.01 | 0.024 | < 0.01 | 0.029 | < 0.01 | < 0.01 | 0.033 | < 0.01 | 0.029 | < 0.01 | < 0.01 | 0.032 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | | | | |
| Subtotal Jul - Sept 2019 | 3,897 | 8,865 | 9,616 | 3,895 | 26,273 | < 0.01 | 2.86 | 0.32 | < 0.01 | 3.18 | < 0.01 | 2.9 | 0.25 | < 0.01 | 3.1 | < 0.01 | < 0.01 | 0.07 | < 0.01 | 0.073 | < 0.01 | 0.031 | < 0.01 | < 0.01 | 0.035 | < 0.01 | 0.031 | < 0.01 | < 0.01 | 0.034 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | | | | |
| October 2019 through December 2019 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10/01/19 - 11/01/19 | 1,343 | 3,210 | 3,370 | 1,351 | 9,275 | < 0.01 | 1.02 | 0.12 | < 0.01 | 1.14 | < 0.01 | 1.0 | 0.09 | < 0.01 | 1.1 | < 0.01 | < 0.01 | 0.03 | 0.04 | 0.066 | < 0.01 | 0.033 | < 0.01 | < 0.01 | 0.037 | < 0.01 | 0.033 | < 0.01 | < 0.01 | 0.036 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 11/01/19 - 12/01/19 | 1,133 | 2,764 | 2,829 | 1,128 | 7,854 | < 0.01 | 0.88 | 0.10 | < 0.01 | 0.98 | < 0.01 | 0.9 | 0.08 | < 0.01 | 1.0 | < 0.01 | < 0.01 | 0.03 | 0.03 | 0.055 | < 0.01 | 0.029 | < 0.01 | < 0.01 | 0.033 | < 0.01 | 0.029 | < 0.01 | < 0.01 | 0.032 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 12/01/19 - 01/01/20 | 1,198 | 2,688 | 3,004 | 1,190 | 8,079 | < 0.01 | 0.86 | 0.11 | < 0.01 | 0.96 | < 0.01 | 0.9 | 0.08 | < 0.01 | 0.9 | < 0.01 | < 0.01 | 0.03 | 0.03 | 0.059 | < 0.01 | 0.028 | < 0.01 | < 0.01 | 0.031 | < 0.01 | 0.028 | < 0.01 | < 0.01 | 0.030 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| Subtotal Oct - Jan 20⁹ | 3,674 | 8,662 | 9,203 | 3,669 | 25,208 | < 0.01 | 2.76 | 0.33 | < 0.01 | 3.09 | < 0.01 | 2.8 | 0.25 | < 0.01 | 3.0 | < 0.01 | < 0.01 | 0.09 | 0.10 | 0.180 | < 0.01 | 0.030 | < 0.01 | < 0.01 | 0.034 | < 0.01 | 0.030 | < 0.01 | < 0.01 | 0.033 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| 2019 Totals | 15,456 | 32,470 | 38,416 | 15,343 | 101,685 | < 0.01 | 11.51 | 1.36 | 0.22 | 13.10 | < 0.01 | 11.51 | 1.07 | < 0.01 | 12.59 | < 0.01 | < 0.01 | 0.29 | 0.18 | 0.63 | < 0.01 | 0.032 | < 0.01 | < 0.01 | 0.048 | < 0.01 | 0.032 | < 0.01 | < 0.01 | 0.034 | < 0.01 | < 0.01 | < 0.01 | 0.001 | < 0.01 | | | | | |
| Total¹⁰ | 162,882 | 366,121 | 379,283 | 161,478 | 1,069,765 | 2 | 1,030 | 915 | 256 | 2,200 | 2 | 1,018 | 106 | 2 | 1,128 | < 0.01 | 10 | 809 | 254 | 1,067 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | | | | |

Abbreviations,

Table 9
 Summary of Air Quality Impact Analysis
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York



| Toxic Air Contaminant ⁴ | CAS# | VSP-05 Vapor Effluent (µg/m ³) | Emission Rate ¹ | | | Scaled Impact - Hourly ² (µg/m ³) | Scaled Impact - Annual ² (µg/m ³) | SGC ³ (µg/m ³) | AGC ³ (µg/m ³) | % of SGC | % of AGC |
|--------------------------------------|------------|--|----------------------------|----------|---------|--|--|---------------------------------------|---------------------------------------|----------|----------|
| | | 11/26/2019 | lb/yr | lb/hr | g/s | | | | | | |
| Project VOCs | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 00071-55-6 | 0.82 | 0.04 | 4.83E-06 | 6.1E-07 | 1.9E-03 | 5.9E-05 | 9,000 | 5000 | 0.0% | 0.0% |
| 1,1-Dichloroethane | 00075-34-3 | 4.5 | 0.23 | 2.65E-05 | 3.3E-06 | 1.1E-02 | 3.2E-04 | -- | 0.63 | -- | 0.1% |
| 1,1-Dichloroethene | 00075-35-4 | 0.99 | 0.05 | 5.84E-06 | 7.4E-07 | 2.3E-03 | 7.1E-05 | -- | 200 | -- | 0.0% |
| Benzene | 00071-43-2 | 1.5 | 0.08 | 8.84E-06 | 1.1E-06 | 3.5E-03 | 1.1E-04 | 1,300 | 0.13 | 0.0% | 0.1% |
| cis-1,2-Dichloroethene | 00156-59-2 | 85.6 | 4.42 | 5.05E-04 | 6.4E-05 | 2.0E-01 | 6.1E-03 | -- | 63 | -- | 0.0% |
| Tetrachloroethene | 00127-18-4 | 1.8 | 0.09 | 1.06E-05 | 1.3E-06 | 4.2E-03 | 1.3E-04 | 300 | 4 | 0.0% | 0.0% |
| Toluene | 00108-88-3 | 2.8 | 0.14 | 1.65E-05 | 2.1E-06 | 6.6E-03 | 2.0E-04 | 37,000 | 5000 | 0.0% | 0.0% |
| Trichloroethene | 00079-01-6 | 31 | 1.60 | 1.83E-04 | 2.3E-05 | 7.3E-02 | 2.2E-03 | 20 | 0.2 | 0.4% | 1.1% |
| Vinyl Chloride | 00075-01-4 | 16 | 0.83 | 9.43E-05 | 1.2E-05 | 3.7E-02 | 1.1E-03 | 180,000 | 0.11 | 0.0% | 1.0% |
| Xylene-O | 01330-20-7 | 0.61 | 0.02 | 2.00E-06 | 2.5E-07 | 8.0E-04 | 2.4E-05 | 22,000 | 100 | 0.0% | 0.0% |
| Xylenes - M,P | 01330-20-7 | 1.4 | 0.03 | 3.30E-06 | 4.2E-07 | 1.3E-03 | 4.0E-05 | 22,000 | 100 | 0.0% | 0.0% |
| Non-Project VOCs | | | | | | | | | | | |
| 2-Butanone | 00078-93-3 | 4.7 | 0.24 | 2.77E-05 | 3.5E-06 | 1.1E-02 | 3.4E-04 | 13,000 | 5000 | 0.0% | 0.0% |
| Acetone | 00067-64-1 | 38.5 | 1.99 | 2.27E-04 | 2.9E-05 | 9.0E-02 | 2.8E-03 | 180,000 | 30000 | 0.0% | 0.0% |
| Chlorodifluoromethane (Freon 22) | 00075-45-6 | 7.7 | 0.40 | 4.54E-05 | 5.7E-06 | 1.8E-02 | 5.5E-04 | -- | 50000 | -- | 0.0% |
| Chloroform | 00067-66-3 | 11 | 0.57 | 6.49E-05 | 8.2E-06 | 2.6E-02 | 7.9E-04 | 150 | 14.7 | 0.0% | 0.0% |
| Chloromethane | 00074-87-3 | 1.3 | 0.07 | 7.67E-06 | 9.7E-07 | 3.0E-03 | 9.3E-05 | 22,000 | 90 | 0.0% | 0.0% |
| Ethylbenzene | 00100-41-4 | 0.48 | 0.02 | 2.83E-06 | 3.6E-07 | 1.1E-03 | 3.4E-05 | -- | 1000 | -- | 0.0% |
| Trichlorofluoromethane (Freon 11) | 00075-69-4 | 1.7 | 0.09 | 1.00E-05 | 1.3E-06 | 4.0E-03 | 1.2E-04 | 9,000 | 5000 | 0.0% | 0.0% |
| Trichlorotrifluoroethane (Freon 113) | 00076-13-1 | 2.0 | 0.10 | 1.18E-05 | 1.5E-06 | 4.7E-03 | 1.4E-04 | 960,000 | 180000 | 0.0% | 0.0% |

Abbreviations, Notes, and Units on last page.

Abbreviations, Notes, and Units:

| | |
|--------|---|
| AGC | Annual Guideline Concentration |
| DAR-1 | Division of Air Resources-1 |
| -- | None Specified |
| NYSDEC | New York State Department of Environmental Conservation |
| SGC | Short-term Guideline Concentration |
| VSP | Vapor Sampling Point |

- Emission rate calculated based on VSP-05 effluent concentration and a daily average exit air flow rate of 1,577 ft³/min for 11/26/2019. Emission rate standardized at 70 F and 1 atm.
 $1,1,1\text{-Trichloroethane (lb/hr)} = \text{TCE } [\mu\text{g/m}^3] \times \text{Air Flow Rate [ft}^3/\text{min}] \times (1 \text{ m}^3/35.3147 \text{ ft}^3) \times (60 \text{ min/hr}) \times (0.000001 \text{ g/1 } \mu\text{g}) \times (0.0022 \text{ lb/g})$
 $\text{lb/yr} = \text{lb/hr} \times 8,760 \text{ hrs/yr}$
 $\text{g/s} = \text{lb/hr} \times \text{hr}/3,600 \text{ sec} \times 453.59 \text{ g/lb}$
- Ambient impact based on AERMOD modeling using normalized rate of 1 g/s is scaled to the actual emission rate of the pollutant. Modeling was performed using the representative meteorological data from the nearest station (Brookhaven/Farmingdale) for the years 2011 through 2015. The maximum impact from all the years was used for the calculations.
 $\text{Scaled hourly impact } (\mu\text{g/m}^3) = \text{AERMOD predicted hourly ambient impact at 1 g/s } ([\mu\text{g/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$
 $\text{Scaled annual impact } (\mu\text{g/m}^3) = \text{AERMOD predicted annual ambient impact at 1 g/s } ([\mu\text{g/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$

| AERMOD Normalized Ambient Impact at 1 g/s | |
|---|------------------------------------|
| Hourly ($\mu\text{g/m}^3$)/(g/s) | Annual ($\mu\text{g/m}^3$)/(g/s) |
| 3,153.03 | 96.49 |

- Short-term and annual guideline concentrations specified in the NYSDEC DAR-1 AGC/SGC tables revised August 10, 2016.
- Compounds not detected above the laboratory reporting limit are excluded from the air quality impact analysis summary.

| | |
|-------------------|----------------------------|
| cfm | cubic feet per minute |
| g/s | grams per second |
| lb/hr | pounds per hour |
| lb/yr | pounds per year |
| $\mu\text{g/m}^3$ | micrograms per cubic meter |

Table 10
 Summary of Remedial Well Groundwater Sample Analytical Results - VOCs
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Compound ¹ (µg/L) | Sample Location: Sample Date: NYSDEC SCGs | RW-1 3/1/2019 | RW-1 6/7/2019 | RW-1 9/6/2019 | RW-1 11/5/2019 | RW-2 3/1/2019 | RW-2 6/7/2019 | RW-2 9/6/2019 | RW-2 11/5/2019 | RW-3 3/1/2019 | RW-3 6/7/2019 | RW-3 9/6/2019 | RW-3 11/5/2019 | RW-4 3/1/2019 | RW-4 6/7/2019 | RW-4 9/6/2019 | RW-4 11/5/2019 |
|--|---|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|-------------------|
| Project VOCs | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 1.1 | 0.78 J | 0.58 J | 0.65 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 9.9 | 8.1 | 10.2 | 10.8 | 2.1 | 2.5 | 2.0 | 2.0 | < 1.0 | < 1.0 | < 1.0 | 0.64 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 10.7 | 8.0 | 8 | 4.9 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 33.4 | 22.7 | 19.9 | 21.9 | 1.2 | 1.3 | 1.1 | 1.2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Xylene-o | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Xylenes-m,p | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Subtotal Project VOCs | | 0 | 0 | 0 | 0 | 55.1 | 39.6 | 38.1 | 38.3 | 3.3 | 3.8 | 3.1 | 3.2 | 0 | 0 | 0 | 0.6 |
| Non-Project VOCs | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,3-Butadiene | 0.5 | NA | < 5.0 | < 5.0 | < 5.0 | NA | < 5.0 | < 5.0 | < 5.0 | NA | < 5.0 | < 5.0 | < 5.0 | NA | < 5.0 | < 5.0 | < 5.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 4-methyl-2-pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromofom | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 3.4 J | 4.0 J | < 5.0 | 3.1 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 0.76 J | 0.87 J | 0.91 J | 1.1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Dichloromethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl N-Butyl Ketone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Methyl tert-Butyl Ether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Styrene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorofluoromethane (Freon 11) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 1-Chloro-1,1-difluoroethane (Freon 142b) | NE | NA | < 5.0 | < 5.0 | < 5.0 | NA | < 5.0 | < 5.0 | < 5.0 | NA | < 5.0 | < 5.0 | < 5.0 | NA | < 5.0 | < 5.0 | < 5.0 |
| Subtotal Non-Project VOCs | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.9 | 0.9 | 1.1 | 3.4 | 4.0 | 0.0 | 3.1 |
| Total VOCs² | | 0.0 | 0.0 | 0.0 | 0.0 | 55.1 | 39.6 | 38.1 | 38.3 | 4.1 | 4.7 | 4.0 | 4.3 | 3.4 | 4.0 | 0.0 | 3.7 |
| 1,4-Dioxane | | 0.42 | 0.33 | 0.41 | 0.47 | 2.2 | 1.4 | 1.7 | 1.5 | 0.41 | 0.32 | 0.35 | 0.39 | 0.21 J | 0.15 J | 0.17 J | 0.23 J |

Notes and abbreviations on last page.

Table 10
 Summary of Remedial Well Groundwater Sample Analytical Results - VOCs
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

Abbreviations, Notes, Qualifiers, and Units:

| | |
|--------|---|
| ASP | Analytical Services Protocol |
| ELAP | Environmental Laboratory Approval Program |
| NA | Not Analyzed |
| NE | Not Established |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| OLM | Ozone Limited Method |
| OM&M | Operation, Maintenance, and Monitoring |
| SCGs | Standards, Criteria, and Guidance values |
| USEPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compound |

1. Water samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per NYSDEC ASP 2005, Method OLM 4.3 (prior to September 1, 2014) and per EPA Method 8260C (after September 1, 2014). Results validated following protocols specified in Sampling and Analysis Plan in the DRAFT Bethpage Park Groundwater Containment System OM&M Manual (Arcadis 2016). See previous quarterly reports for historical analytical results.

2. "Total VOCs" represents the sum of individual concentrations of the VOCs detected.

| | |
|------------|---|
| 8.1 | Bold cell outline indicates an exceedance of an SCG |
| 8.1 | Bold data indicates a detection |
| < 1.0 | Compound not detected above its laboratory quantification limit |
| J | Compound detected below its reporting limit; value is estimated |
| µg/L | micrograms per liter |

Table 11
 Summary of Water-Level Elevations
 Bethpage Park Groundwater Containment System
 Operable Unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Well Identification | Well Casing Elevation (ft. msl) | Event Date | Baseline ⁽¹⁾ 5/3/2009 (ft. msl) | 1 Q 2019 2/3/2019 (ft. msl) | 2Q 2019 5/30/2019 (ft. msl) | 3Q 2019 7/2/2019 (ft. msl) | 4Q 2019 11/25/2019 (ft. msl) |
|---------------------------|---------------------------------|------------|--|-----------------------------|-----------------------------|----------------------------|------------------------------|
| Recovery Wells | | | | | | | |
| RW-1 | 125.18 | | 69.75 | 68.78 | 70.50 | 71.18 | 69.98 |
| RW-2 | 124.48 | | 72.27 | 59.98 | 64.45 | 62.18 | 70.73 |
| RW-3 | 122.84 | | 69.40 | 65.44 | 67.35 | 67.94 | 66.70 |
| RW-4 | 121.24 | | 69.25 | 68.24 | 69.92 | 70.54 | 69.46 |
| Monitoring Wells | | | | | | | |
| B24MW-2 | 126.96 | | 74.31 | 72.38 | 73.51 | 74.27 | 73.74 |
| B24MW-3 | 127.11 | | 72.63 | NM | 73.62 | 73.84 | 73.01 |
| B30MW-1 | 128.33 | | 73.55 | 71.20 | 73.04 | 73.30 | 71.54 |
| BCPMW-1 | 125.73 | | 73.16 | 71.23 | NM | NM | NM |
| BCPMW-2 | 126.39 | | 72.55 | 70.29 | NM | NM | NM |
| BCPMW-3 | 124.94 | | 72.46 | 70.02 | NM | NM | NM |
| BCPMW-4-1 | 128.71 | | 72.30 | 69.80 | 71.59 | 71.79 | 70.97 |
| BCPMW-4-2 | 129.33 | | 72.58 | 70.06 | 71.87 | 72.05 | 71.25 |
| BCPMW-4-3 | 129.20 | | 72.32 | 69.97 | 71.75 | 71.92 | 71.14 |
| BCPMW-5-1 | 129.37 | | 72.79 | 70.47 | NM | NM | NM |
| BCPMW-6-1 | 126.01 | | 72.12 | 69.65 | 71.40 | 71.70 | 70.92 |
| BCPMW-6-2 | 125.16 | | 71.74 | 69.33 | 71.08 | 71.34 | 70.59 |
| BCPMW-7-1 | 124.81 | | 72.00 | 69.71 | 71.46 | 71.79 | 71.01 |
| MW-200-1 | 123.49 | | 72.16 | 69.93 | 71.68 | 71.94 | 71.08 |
| MW-201-1 | 121.69 | | 72.04 | 69.60 | 71.40 | 71.65 | 70.85 |
| MW-202-1 | 119.27 | | 71.90 | 69.55 | 71.37 | 71.71 | 70.84 |
| MW-203-1 | 118.25 | | 71.83 | 69.56 | 71.30 | 71.58 | 70.81 |
| MW-204-1 ⁽²⁾ | 124.95 | | -- | 69.84 | 71.65 | 71.86 | 71.05 |
| MW-205-1 ⁽²⁾ | 123.47 | | -- | 69.42 | 71.35 | 71.57 | 70.75 |
| MW-206-1 ⁽²⁾ | 120.80 | | -- | 69.56 | 71.35 | 71.57 | 70.84 |
| MW-207A-1R ⁽²⁾ | 120.38 | | -- | 69.26 | 70.99 | 71.27 | 70.51 |
| MW-207B-1R ⁽²⁾ | 120.48 | | -- | 69.52 | 71.19 | 71.42 | 70.70 |
| MW-208-1 ⁽²⁾ | 118.56 | | -- | 69.05 | 70.25 | 71.00 | 70.86 |
| Production Wells | | | | | | | |
| PZ-1a | 128.82 | | 72.56 | 69.32 | 71.09 | 71.34 | 70.49 |
| PZ-1b | 128.92 | | 72.47 | 69.65 | 71.49 | 71.66 | 70.84 |
| PZ-1c | 128.96 | | 72.47 | 69.93 | 71.66 | 71.86 | 71.12 |
| PZ-2a | 128.36 | | 72.47 | 69.63 | 71.40 | 71.63 | 70.81 |
| PZ-2b | 128.37 | | 72.43 | 69.58 | 71.39 | 71.56 | 70.77 |
| PZ-2c | 128.55 | | 72.41 | 69.84 | 71.97 | 71.78 | 71.03 |
| PZ-3 | 124.99 | | 72.52 | 69.49 | 71.34 | 71.50 | 70.68 |
| PZ-4 | 125.31 | | 72.50 | 69.64 | 44.10 | 45.11 | 44.51 |
| PZ-5a | 129.07 | | 72.50 | 70.44 | 72.16 | 72.39 | 71.56 |
| PZ-5b | 129.06 | | 72.50 | 70.34 | 72.05 | 72.26 | 71.47 |
| PZ-5c ⁽²⁾ | 128.84 | | -- | 69.87 | 71.98 | 72.20 | 71.42 |
| PZ-6a | 125.67 | | 72.50 | 68.43 | 71.20 | 71.48 | 70.68 |
| PZ-6b | 125.74 | | 72.50 | 69.36 | 71.14 | 71.40 | 70.62 |
| PZ-7a | 125.10 | | 72.50 | 69.73 | 71.22 | 71.84 | 71.03 |
| PZ-7b | 125.06 | | 72.50 | 69.55 | 71.29 | 71.51 | 70.81 |
| PZ-8a ⁽²⁾ | 127.63 | | -- | 69.37 | 71.16 | 71.45 | 70.61 |
| PZ-8b ⁽²⁾ | 127.54 | | -- | 69.44 | 71.23 | 71.45 | 70.66 |
| PZ-8c ⁽²⁾ | 127.57 | | -- | 69.73 | 71.48 | 69.67 | 70.95 |
| PZ-9a ⁽²⁾ | 125.30 | | -- | NM | NM | NM | NM |
| PZ-10a ⁽²⁾ | 125.27 | | -- | 70.46 | 72.13 | 72.54 | 66.73 |

Notes and abbreviations on last page.

Table 11
Summary of Water-Level Elevations
Bethpage Park Groundwater Containment System
Operable Unit 3 (Former Grumman Settling Ponds)
Bethpage, New York

Notes and Abbreviations:

1. Baseline readings were taken prior to system startup, which occurred on July 21, 2009.
 2. Wells installed by EMAGIN in 2017 to replace monitoring wells MW-207-1a (replaced by MW-207A-1R) and MW-207-1b (replaced by MW-207B-1R) installed by ERM in 2015.
- ft msl Feet relative to mean sea level
NM Not measured due to In-Situ Thermal Remediation activities

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | B24MW-2 12/28/2015 | B24MW-2 12/29/2016 | B24MW-2 8/4/2017 | B24MW-2 8/9/2018 | B24MW-2 7/18/2019 |
|---|----------------------------------|-----------------------|-----------------------|---------------------|---------------------|----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 2.7 | 2.4 | 2.1 | 2.5 | 4.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 2.7 | 2.4 | 2.1 | 2.5 | 4 |
| Project VOCs⁽⁴⁾ | | 2.7 | 2.4 | 2.1 | 2.5 | 4 |
| 1,4-Dioxane | | 0.185 | 0.417 | 0.348 | 0.16 J | 0.29 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | B24MW-3 12/28/2015 | B24MW-3 1/20/2017 | B24MW-3 8/2/2017 | B24MW-3 8/9/2018 | B24MW-3 7/16/2019 |
|---|----------------------------------|-----------------------|----------------------|---------------------|---------------------|----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 0.30 J | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | 0.59 J | < 1.0 | 3.2 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 0.25 J | < 1.0 | < 1.0 | < 1.0 | 1.3 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0.55 | 0 | 0.59 | 0 | 4.5 |
| Project VOCs⁽⁴⁾ | | 0.25 | 0 | 0.59 | 0 | 4.5 |
| 1,4-Dioxane | | 0.257 | 0.918 | 0.675 | 0.11 J | < 0.24 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | B30MW-1 12/31/2015 | B30MW-1 1/4/2017 | B30MW-1 8/3/2017 | B30MW-1 8/9/2018 | B30MW-1 7/17/2019 |
|---|----------------------------------|-----------------------|---------------------|---------------------|---------------------|----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| Project VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| 1,4-Dioxane | | < 0.10 | < 0.200 | < 0.200 | < 0.24 | < 0.24 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: | BCPMW-4-1 10/8/2015 | BCPMW-4-1 12/30/2015 | BCPMW-4-1 12/28/2016 | BCPMW-4-1 7/31/2017 | BCPMW-4-1 7/24/2018 |
|--|----------------------------------|------------------------|-------------------------|-------------------------|------------------------|------------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | 4.2 | 7.3 | 0.36 J | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | 1.1 | 1.7 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | 13.3 | 27.1 | 3.2 | 1.6 | 0.87 J |
| 1,1-Dichloroethene | 5 | 0.98 J | 1.7 | 0.42 J | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | 0.97 J | 1.3 | 0.87 J | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | 0.95 | 1.5 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 0.70 J | 1.1 | 1.4 | 0.76 J | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 156 | 252 D | 81.4 | 53.5 | 30.7 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | 1.1 | 1.1 | 0.50 J | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | 0.86 J | 0.49 J | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 68.1 | 81.5 | 48.2 | 21.9 | 13.5 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | 13 | 197 | 3.3 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | 0.70 J | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 260 | 570 | 140 | 78 | 45 |
| Project VOCs⁽⁴⁾ | | 260 | 570 | 140 | 77 | 45 |
| 1,4-Dioxane | | -- | 37.7 | 39.3 | 2.64 | 0.68 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: | BCPMW-4-1 7/11/2019 | BCPMW-4-2 10/8/2015 | BCPMW-4-2 12/31/2015 | BCPMW-4-2 (REP) 12/31/2015 | BCPMW-4-2 12/22/2016 |
|--|----------------------------------|------------------------|------------------------|-------------------------|-------------------------------|-------------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | 0.73 J | 0.48 J | 0.23 J | 0.24 J | 0.22 J |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | 1.3 | 2.0 | 2.0 | 3.9 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 20.7 | 29.7 | 13.3 | 13.2 | 16.9 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 0.62 J |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 8.9 | 25.6 | 16.0 | 16.3 | 18.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | 3.7 | 0.96 J | 0.92 J | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs ⁽⁴⁾ | | 30 | 61 | 32 | 33 | 40 |
| Project VOCs ⁽⁴⁾ | | 30 | 59 | 30 | 31 | 36 |
| 1,4-Dioxane | | 7.4 | — | 0.858 | 0.982 | 2.34 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: NYSDEC SCGs | BCPMW-4-2 (REP) 12/22/2016 | BCPMW-4-2 7/31/2017 | BCPMW-4-2 7/24/2018 | BCPMW-4-2 7/11/2019 | BCPMW-4-3 12/31/2015 |
|--|--|-------------------------------|------------------------|------------------------|------------------------|-------------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | 0.23 J | 0.25 J | 0.87 J | 0.97 J | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 J |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 3.6 | 2.3 | 1.3 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 17.4 | 19.9 | 58.1 | 68.5 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | 0.27 J | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | 0.58 J | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 18.1 | 17.6 | 61.5 | 37.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 J |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs ⁽⁴⁾ | | 40 | 40 | 120 | 110 | 0 |
| Project VOCs ⁽⁴⁾ | | 37 | 38 | 120 | 110 | 0 |
| 1,4-Dioxane | | 2.40 | 1.35 | 2.4 | 0.77 | 0.263 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: NYSDEC SCGs | BCPMW-4-3 12/22/2016 | BCPMW-4-3 8/3/2017 | BCPMW-4-3 8/8/2018 | BCPMW-4-3 7/11/2019 | BCPMW-6-1 12/23/2015 |
|---|--|-------------------------|-----------------------|-----------------------|------------------------|-------------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 0.52 J | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0.52 | 0 | 0 | 0 | 0 |
| Project VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| 1,4-Dioxane | | 0.776 | 0.616 | 0.43 | 0.41 | < 0.10 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: NYSDEC SCGs | BCPMW-6-1 12/27/2016 | BCPMW-6-1 8/1/2017 | BCPMW-6-1 8/6/2018 | BCPMW-6-1 7/15/2019 | BCPMW-6-2 12/23/2015 |
|--|--|-------------------------|-----------------------|-----------------------|------------------------|-------------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | 3.7 J | 4.1 J | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0 | 0 | 3.7 | 4.1 | 0 |
| Project VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| 1,4-Dioxane | | < 0.200 | < 0.200 | < 0.24 | < 0.23 | < 0.10 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: NYSDEC SCGs | BCPMW-6-2 12/27/2016 | BCPMW-6-2 8/2/2017 | BCPMW-6-2 8/6/2018 | BCPMW-6-2 7/16/2019 | BCPMW-7-1 12/22/2015 |
|--|--|-------------------------|-----------------------|-----------------------|------------------------|-------------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | 0.21 J | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | 0.97 J | 0.92 J | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs ⁽⁴⁾ | | 0 | 0.21 | 0.97 | 0.92 | 0 |
| Project VOCs ⁽⁴⁾ | | 0 | 0.21 | 0.97 | 0.92 | 0 |
| 1,4-Dioxane | | < 0.200 | < 0.100 | 0.092 J | 0.096 J | < 0.10 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | BCPMW-7-1 12/28/2016 | BCPMW-7-1 8/1/2017 | BCPMW-7-1 8/3/2018 | BCPMW-7-1 8/8/2018 | BCPMW-7-1 7/10/2019 |
|---|----------------------------------|-------------------------|-----------------------|-----------------------|-----------------------|------------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| Project VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| 1,4-Dioxane | | < 0.200 | < 0.200 | -- | < 0.24 | < 0.24 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | MW-200-1 12/24/2015 | MW-200-1 1/17/2017 | MW-200-1 8/7/2017 | MW-200-1 7/30/2018 | MW-200-1 7/8/2019 |
|---|----------------------------------|------------------------|-----------------------|----------------------|-----------------------|----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 J | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 J | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 J | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| Project VOCs⁽⁴⁾ | | 0 | 0 | 0 | 0 | 0 |
| 1,4-Dioxane | | 0.309 | 0.725 | 0.537 | 0.40 | 0.26 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: NYSDEC SCGs | MW-201-1 12/24/2015 | MW-201-1 1/18/2017 | MW-201-1 8/8/2017 | MW-201-1 8/1/2018 | MW-201-1 7/8/2019 |
|--|--|------------------------|-----------------------|----------------------|----------------------|----------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 1.0 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 4.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 0.43 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 2.0 | 2.0 | 1.5 | 0.87 J | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 2.3 | 1.6 | 1.3 | 0.90 J | 0.69 J |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 4.7 | 3.6 | 2.8 | 1.8 | 0.69 |
| Project VOCs⁽⁴⁾ | | 4.3 | 3.6 | 2.8 | 1.8 | 0.69 |
| 1,4-Dioxane | | 0.262 | 0.655 | 0.676 | 0.40 | 0.30 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | MW-202-1 12/31/2015 | MW-202-1 1/19/2017 | MW-202-1 8/9/2017 | MW-202-1 7/31/2018 | MW-202-1 7/10/2019 |
|---|----------------------------------|------------------------|-----------------------|----------------------|-----------------------|-----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | 2.4 | 0.66 J | 0.80 J | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | 1.5 | 0.33 J | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 1.2 | 0.45 J | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | 2.5 | 1.3 | 1.4 | 1.1 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 1.3 | 0.68 J | 0.96 J | 0.70 J | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | 1.1 J | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 10 | 3.4 | 3.2 | 1.8 | 0 |
| Project VOCs⁽⁴⁾ | | 8.9 | 3.4 | 3.2 | 1.8 | 0 |
| 1,4-Dioxane | | 0.404 | 0.396 | 0.518 | 0.30 | 0.17 J |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: NYSDEC SCGs | MW-203-1 12/30/2015 | MW-203-1 1/20/2017 | MW-203-1 6/10/2017 | MW-203-1 8/2/2018 | MW-203-1 7/9/2019 |
|--|--|------------------------|-----------------------|-----------------------|----------------------|----------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | 0.38 J | 0.30 J | 0.34 J | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | 1.9 J | 2.0 J | 3.3 J | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 0.32 J | 0.27 J | 0.35 J | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 0.35 J | 0.92 J | 0.55 J | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | 0.58 J | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | 1.2 | 0.76 J | 1.2 | < 1.0 | 1.2 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 2.5 | 3.9 | 2.9 | 2.6 | 2.3 |
| Trichlorotrifluoroethane (Freon 113) | 5 | 0.56 J | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 7.8 | 8.2 | 8.6 | 2.6 | 3.5 |
| Project VOCs⁽⁴⁾ | | 4.4 | 5.9 | 5.0 | 2.6 | 3.5 |
| 1,4-Dioxane | | 0.134 | 0.401 | 0.262 | 0.19 J | 0.24 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: | MW-204-1 12/24/2015 | MW-204-1 1/17/2017 | MW-204-1 8/7/2017 | MW-204-1 (REP) 8/7/2017 | MW-204-1 7/30/2018 |
|--|----------------------------------|------------------------|-----------------------|----------------------|----------------------------|-----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 J |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 J |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 J |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 0.50 J | 0.24 J | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 2.5 | 3.4 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 4.0 | 4.1 | 2.4 | 2.5 | 0.63 J |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 7.0 | 7.7 | 2.4 | 2.5 | 0.63 |
| Project VOCs⁽⁴⁾ | | 6.5 | 7.5 | 2.4 | 2.5 | 0.63 |
| 1,4-Dioxane | | < 0.11 | 0.350 | 0.306 | 0.319 | 0.25 J |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: | MW-204-1 7/8/2019 | MW-205-1 12/29/2015 | MW-205-1 1/18/2017 | MW-205-1 8/8/2017 | MW-205-1 8/1/2018 |
|---|----------------------------------|----------------------|------------------------|-----------------------|----------------------|----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | 3.0 J | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | 0.64 J | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | 1.1 | 0.39 J | 0.62 J | 0.76 J |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | 0.76 J | 0.91 J | 0.41 J | < 1.0 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0 | 4.9 | 1.9 | 1.0 | 0.76 |
| Project VOCs⁽⁴⁾ | | 0 | 1.9 | 1.3 | 1.0 | 0.76 |
| 1,4-Dioxane | | 0.14 J | 0.162 | 0.366 | 0.714 | 0.40 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: NYSDEC SCGs | MW-205-1 7/8/2019 | MW-205-1 12/29/2015 | MW-206-1 1/19/2017 | MW-206-1 8/9/2017 | MW-206-1 7/31/2018 |
|--|--|----------------------|------------------------|-----------------------|----------------------|-----------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | 0.27 J | 0.76 J | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | 0.44 J | 0.74 J | 3.0 | 0.96 J |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | 0.27 J | 1.7 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | 0.32 J | 0.92 J | 1.3 | 0.56 J |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | 0.45 J | 0.56 J | 2.8 | 1.4 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | 0.65 J | 0.79 J |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 0 | 1.2 | 2.8 | 10 | 3.7 |
| Project VOCs⁽⁴⁾ | | 0 | 1.2 | 2.8 | 10 | 3.7 |
| 1,4-Dioxane | | 0.16 J | < 0.10 | 0.30 J | 1.06 | 0.34 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L) | Sample Location: Sample Date: | MW-206-1 7/9/2019 | MW-207A-1R 7/10/2019 | MW-207B-1R 7/10/2019 | MW-208-1 12/29/2015 | MW-208-1 1/20/2017 |
|--|----------------------------------|----------------------|-------------------------|-------------------------|------------------------|-----------------------|
| | NYSDEC SCGs | | | | | |
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | 2.9 | 2.1 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | 0.89 J | 0.70 J |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 0.35 J |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | < 1.0 | < 1.0 | < 1.0 | 3.1 | 2.8 |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | 546 D | 597 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | 0.39 J | 0.43 J |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 0.60 J |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | < 1.0 | < 1.0 | 0.88 J | 17.4 | 10.9 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | < 1.0 | < 1.0 | < 1.0 | 6.4 | 3.3 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs ⁽⁴⁾ | | 0 | 0 | 0.88 | 580 | 620 |
| Project VOCs ⁽⁴⁾ | | 0 | 0 | 0.88 | 570 | 610 |
| 1,4-Dioxane | | 0.21 J | 0.45 | 0.68 | 0.526 | 1.02 |

See Notes and Abbreviations on Last Page

Table 12
 Concentrations of Volatile Organic Compounds and 1,4-Dioxane
 in Groundwater Samples Collected from Monitoring Wells,
 Bethpage Park Groundwater Containment System,
 OU3 (Former Settling Ponds)
 Bethpage, New York

| Compound ^(1,2,3) (units in µg/L.) | Sample Location: Sample Date: NYSDEC SCGs | MW-208-1 8/10/2017 | MW-208-1 8/2/2018 | MW-208-1 (REP) 8/2/2018 | MW-208-1 7/9/2019 | MW-208-1 (REP) 7/9/2019 |
|---|--|-----------------------|----------------------|----------------------------|----------------------|----------------------------|
| 1,1,1-Trichloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2,2-Tetrachloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,2-Trichloroethane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1-Dichloroethane | 5 | 1.1 | 0.61 J | < 1.0 | 0.69 J | < 1.0 |
| 1,1-Dichloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethane | 0.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloropropane | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 2-Butanone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Hexanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone | 50 | < 5.0 | < 5.0 | < 5.0 | < 5.0 J | < 5.0 |
| Acetone | NE | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzene | 1 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Bromodichloromethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromoform | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Bromomethane | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Disulfide | 60 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Carbon Tetrachloride | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorobenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodifluoromethane (Freon 22) | NE | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chloroethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | 7 | 1.4 | 0.75 J | 0.71 J | 0.53 J | 0.62 J |
| Chloromethane | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| cis-1,2-Dichloroethene | 5 | 268 | 129 | 135 | 176 J | 166 |
| cis-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chlorodibromomethane | 50 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dichlorodifluoromethane (Freon 12) | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Ethylbenzene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methyl-Tert-Butylether | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 5 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| Styrene (Monomer) | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,2-Dichloroethene | 5 | 1.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| trans-1,3-Dichloropropene | 0.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | 5 | 12.8 | 11.7 | 11.4 | 9.1 | 9.4 |
| Trichlorotrifluoroethane (Freon 113) | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Chloride | 2 | 1.8 | 1.1 | 0.98 J | < 1.0 | < 1.0 |
| o-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| m,p-Xylene | 5 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total VOCs⁽⁴⁾ | | 290 | 140 | 150 | 190 | 180 |
| Project VOCs⁽⁴⁾ | | 290 | 140 | 150 | 190 | 180 |
| 1,4-Dioxane | | 0.800 | 0.51 | 0.35 | 0.38 | 0.40 |

See Notes and Abbreviations on Last Page

Table 12

Concentrations of Volatile Organic Compounds and 1,4-Dioxane in Groundwater Samples Collected from Monitoring Wells, Bethpage Park Groundwater Containment System, OU3 (Former Settling Ponds) Bethpage, New York

Notes and Abbreviations

1. Historic data available in previous quarterly reports.
2. Results are validated at 20% frequency, per protocols specified in Sampling and Analysis Plan in the Bethpage Park Groundwater Containment System OM&M Manual (ARCADIS 2016).
3. Samples analyzed for the TCL VOCs using USEPA Method 8260C. Samples analyzed for 1,4-Dioxane using USEPA Method 8270D SIM (prior to 2016), per USEPA Method 522 SIM (2016-2017) and per USEPA Method 8270D SIM (since 2018).
4. "Total VOCs" represents the sum of individual concentrations of the VOCs detected. TVOCs were rounded to two significant figures. "Project VOCs" represents the sum of individual concentrations of 1,1,1-Trichloroethane; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethene; Tetrachloroethene; Trichloroethene; Vinyl Chloride; cis-1,2-Dichloroethene; trans-1,2-Dichloroethene; Benzene; Toluene; and Xylenes-o,m, and p.

| | |
|-------------------|--|
| [] | Bolded outline indicates an exceedance of an SCG. |
| < 5 | Compound not detected above its laboratory quantification limit. |
| 2.1 | Bold value indicates a detection. |
| <i>italicized</i> | <i>italicized indicates most recent data</i> |
| D | Constituent identified from secondary dilution |
| J | Result is estimated |
| ug/L | Micrograms per liter |
| NE | Not Established |
| ASP | Analytical Services Protocol |
| -- | Not Analyzed |
| NYSDEC | New York State Department of Environmental Conservation |
| REP | Field Replicate QA/QC sample |
| SCGs | Standards, Criteria, and Guidance values |
| SIM | Selective Ion Monitoring |
| TCL | Target compound list. |
| USEPA | United State Environmental Protection Agency |
| VOC | Volatile Organic Compound |
| OU | Operable Unit |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | B24MW-3 | B30MW-1 | BCPMW-4-1 | BCPMW-4-1 | BCPMW-4-1 | BCPMW-4-1 | BCPMW-4-1 |
|---------------------------------|------------------|-------------|----------|-------------|-------------|------------|-----------|-----------|
| | Sample Date: | 8/9/2018 | 8/9/2018 | 10/8/2015 | 12/30/2015 | 12/28/2016 | 7/31/2017 | 7/24/2018 |
| | NYSDEC SCGs | | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 12.5 | < 10 | 24.9 | 22.7 | < 10 | < 10 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | 22.1 | 19.2 | < 10 | < 10 | < 10 |

Table 13
Concentrations of Metals in Groundwater Samples Collected
from Monitoring Wells, Bethpage Park Groundwater Containment System,
OU 3 (Former Settling Ponds),
Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | <i>BCPMW-4-1</i> | <i>BCPMW-4-2</i> | <i>BCPMW-4-2</i> | <i>BCPMW-4-2</i> | <i>BCPMW-4-2 (REP)</i> | <i>BCPMW-4-2</i> |
|---------------------------------|------------------|------------------|------------------|-------------------|-------------------|------------------------|------------------|
| | Sample Date: | <i>7/11/2019</i> | <i>10/8/2015</i> | <i>12/31/2015</i> | <i>12/22/2016</i> | <i>12/22/2016</i> | <i>7/31/2017</i> |
| | NYSDEC SCGs | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 19.4 | < 10 | < 10 | 17.3 | 20.5 | < 10 |
| Chromim, Dissolved | 50 | 17.2 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | BCPMW-4-2 | BCPMW-4-2 | BCPMW-4-3 | BCPMW-4-3 | BCPMW-4-3 | BCPMW-4-3 |
|---------------------------------|------------------|-----------|-----------|-----------|------------|------------|-----------|
| | Sample Date: | 7/24/2018 | 7/11/2019 | 10/9/2015 | 12/31/2015 | 12/22/2015 | 8/3/2017 |
| | NYSDEC SCGs | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | < 10 | < 10 | < 10 | < 10 | 11.2 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | BCPMW-4-3 | BCPMW-4-3 | BCPMW-6-1 | BCPMW-6-1 | BCPMW-6-1 | BCPMW-6-1 |
|---------------------------------|------------------|-----------|-----------|------------|------------|-----------|-----------|
| | Sample Date: | 8/8/2018 | 7/11/2019 | 12/23/2015 | 12/27/2016 | 8/1/2017 | 8/6/2018 |
| | NYSDEC SCGs | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | < 10 | < 10 | < 10 | 223 | < 10 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | <i>BCPMW-6-1</i> | BCPMW-6-2 | BCPMW-6-2 | BCPMW-6-2 | BCPMW-6-2 |
|---------------------------------|------------------|------------------|------------|-------------|-------------|-----------|
| | Sample Date: | <i>7/15/2019</i> | 12/23/2015 | 12/27/2016 | 8/2/2017 | 8/6/2018 |
| | NYSDEC SCGs | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | 3.3 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | < 10 | < 10 | 13.5 | 87.7 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
Concentrations of Metals in Groundwater Samples Collected
from Monitoring Wells, Bethpage Park Groundwater Containment System,
OU 3 (Former Settling Ponds),
Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | BCPMW-7-1 | BCPMW-7-1 | BCPMW-7-1 | BCPMW-7-1 | BCPMW-7-1 | BCPMW-7-1 |
|---------------------------------|------------------|------------|-------------|-----------|-----------|-----------|-----------|
| | Sample Date: | 12/22/2015 | 12/26/2016 | 8/1/2017 | 8/3/2018 | 8/8/2018 | 7/10/2019 |
| | NYSDEC SCGs | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | < 10 | 66.0 | < 10 | < 10 | < 10 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
Concentrations of Metals in Groundwater Samples Collected
from Monitoring Wells, Bethpage Park Groundwater Containment System,
OU 3 (Former Settling Ponds),
Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-200-1 | MW-200-1 | MW-200-1 | MW-200-1 | MW-200-1 |
|---------------------------------|------------------|-------------|-----------|-------------|-------------|-------------|
| | Sample Date: | 12/24/2015 | 1/17/2017 | 8/7/2017 | 7/30/2018 | 7/8/2019 |
| | NYSDEC SCGs | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 54.2 | < 10 | 11.1 | 12.4 | 11.5 |
| Chromim, Dissolved | 50 | 29.5 | < 10 | < 10 | < 10 | < 10 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-201-1 | MW-201-1 | MW-201-1 | MW-201-1 | MW-201-1 | MW-202-1 | MW-202-1 |
|---------------------------------|------------------|------------|-----------|----------|----------|----------|------------|-----------|
| | Sample Date: | 12/30/2015 | 1/18/2017 | 8/8/2017 | 8/1/2018 | 7/8/2019 | 12/31/2015 | 1/19/2017 |
| | NYSDEC SCGs | | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | < 10 | < 10 | 11.7 | < 10 | < 10 | 34.9 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-202-1 | MW-202-1 | MW-202-1 | MW-203-1 | MW-203-1 | MW-203-1 |
|---------------------------------|------------------|-------------|-------------|-------------|-------------|-----------|------------|
| | Sample Date: | 8/9/2017 | 7/31/2018 | 7/10/2019 | 12/20/2015 | 1/20/2017 | 8/10/2017 |
| | NYSDEC SCGs | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 73.4 | 21.4 | 26.5 | 81.6 | < 10 | 138 |
| Chromim, Dissolved | 50 | 14.4 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
Concentrations of Metals in Groundwater Samples Collected
from Monitoring Wells, Bethpage Park Groundwater Containment System,
OU 3 (Former Settling Ponds),
Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-203-1 | MW-203-1 | MW-204-1 | MW-204-1 | MW-204-1 | MW-204-1 (REP) |
|---------------------------------|------------------|-------------|----------|-------------|-------------|-------------|----------------|
| | Sample Date: | 8/2/2018 | 7/9/2019 | 12/24/2015 | 1/17/2017 | 8/7/2017 | 8/7/2017 |
| | NYSDEC SCGs | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 22.7 | < 10 | 85.3 | 57.0 | 175 | 171 |
| Chromim, Dissolved | 50 | < 10 | < 10 | 38.5 | 31.1 | 87.0 | 85.3 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-204-1 | MW-204-1 | MW-205-1 | MW-205-1 | MW-205-1 | MW-205-1 | MW-205-1 |
|---------------------------------|------------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|
| | Sample Date: | 7/30/2018 | 7/8/2019 | 12/29/2015 | 1/18/2017 | 8/8/2017 | 8/1/2018 | 7/8/2019 |
| | NYSDEC SCGs | | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 239 | 30.1 | 11.4 | 73.4 | 134 | 88.7 | 70.2 |
| Chromim, Dissolved | 50 | 89.1 | < 10 | < 10 | < 10 | < 10 | 23.7 | 22.1 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-206-1 | MW-206-1 | MW-206-1 | MW-206-1 | MW-206-1 | MW-207A-1R | MW-207B-1R |
|---------------------------------|------------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| | Sample Date: | 12/29/2015 | 1/19/2017 | 8/9/2017 | 7/31/2018 | 7/9/2019 | 7/10/2019 | 7/10/2019 |
| | NYSDEC SCGs | | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | 12.6 | 162 | 82.0 | 13.6 | 10.7 | < 10 | 86.6 |
| Chromim, Dissolved | 50 | < 10 | < 10 | 10.7 | < 10 | < 10 | < 10 | < 10 |

Table 13
 Concentrations of Metals in Groundwater Samples Collected
 from Monitoring Wells, Bethpage Park Groundwater Containment System,
 OU 3 (Former Settling Ponds),
 Bethpage, New York

| Constituents (units in ug/L) | Sample Location: | MW-208-1 | MW-208-1 | MW-208-1 | MW-208-1 | MW-208-1 (REP) | MW-208-1 | MW-208-1 (REP) |
|---------------------------------|------------------|------------|-----------|-----------|----------|----------------|----------|----------------|
| | Sample Date: | 12/29/2015 | 1/20/2017 | 8/10/2017 | 8/2/2018 | 8/2/2018 | 7/9/2019 | 7/9/2019 |
| | NYSDEC SCGs | | | | | | | |
| Cadmim, Total | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Cadmim, Dissolved | 5 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 | < 3.0 |
| Chromim, Total | 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Chromim, Dissolved | 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Table 13
Concentrations of Metals in Groundwater Samples Collected
from Monitoring Wells, Bethpage Park Groundwater Containment System,
OU 3 (Former Settling Ponds),
Bethpage, New York

Notes and Abbreviations:

1. Historic data available in previous quarterly reports.
2. Results are validated at 20% frequency, per protocols specified in Sampling and Analysis Plan in the DRAFT Bethpage Park Groundwater Containment System OM&M Manual (ARCADIS 2016).
3. Samples analyzed for metals using USEPA Method 6010.

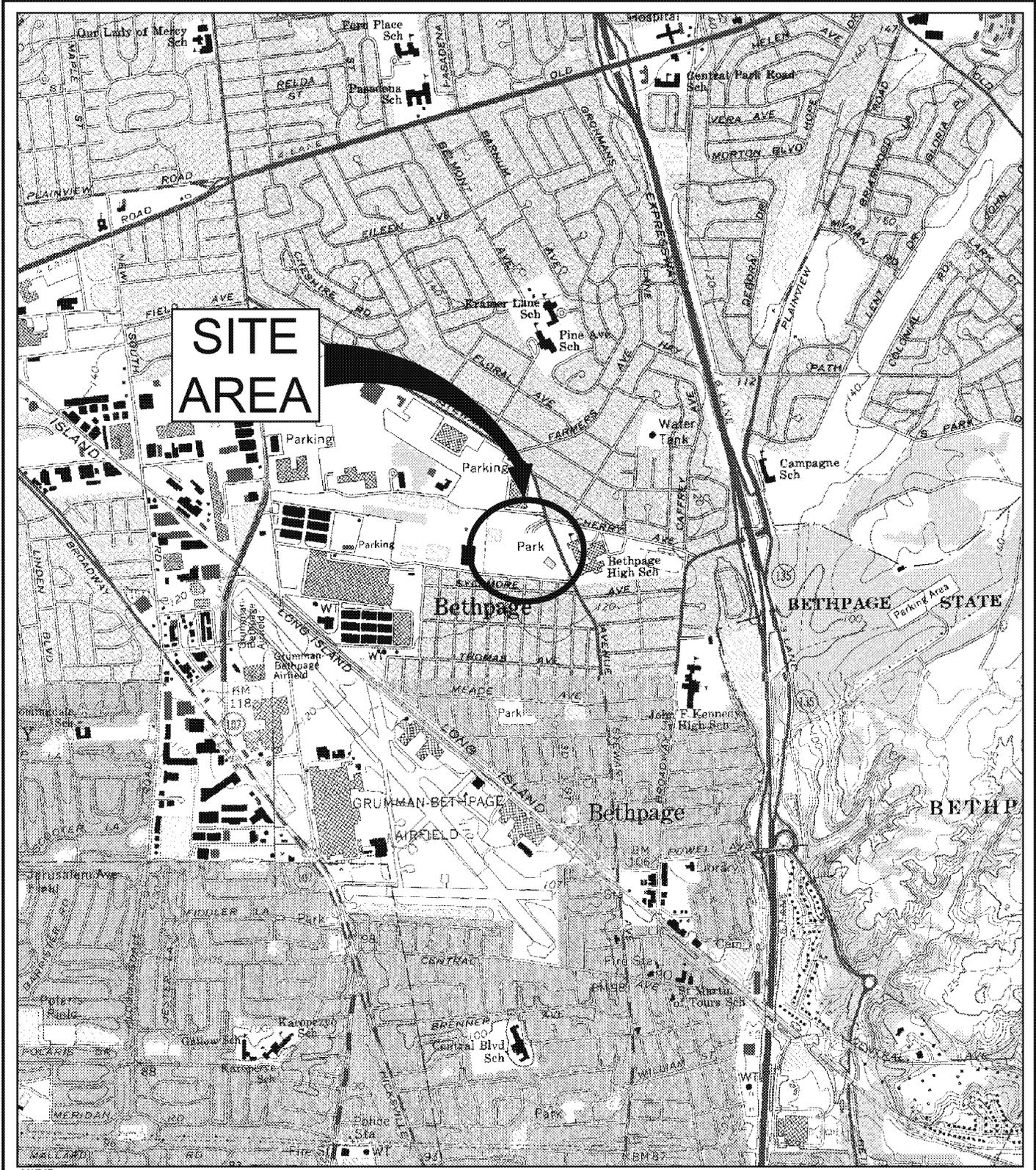
italicized indicates most recent data

| | |
|--|---|
| ug/L | Micrograms per liter |
| | Indicates an exceedance of an SCG |
| 12.5 | Bold indicates a detection |
| < 3.0 | Compound not detected above its laboratory quantification limit |
| -- | Not Analyzed |
| NYSDEC | New York State Department of Environmental Conservation |
| SCGs | Standards, Criteria, and Guidance values |
| OU | Operable Unit |

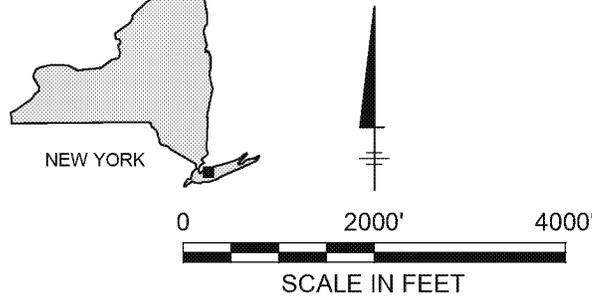
FIGURES



CITY:SYRACUSE,NY DIV:GROUP:ENV DBA:SANCHEZ LD: PIC:(Opt) PM:(Read) TM:(Opt) LXR:(Opt)OVI:(OFF)-REF-
 G:\ENV\CAD\STRACUSE\ACTIVITY\001486114\ADMIN\1486_B01.dwg _LAYOUT: BETHPAGE PARK SAVED: 11/11/2016 4:51 PM ACADVER: 19.15 (LMS TECH) PAGES: 10 PLOT: PLOTSTY:LETABLE PLOT: 11/11/2016 4:54 PM BY: STOWELL, GARY



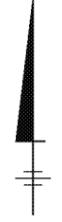
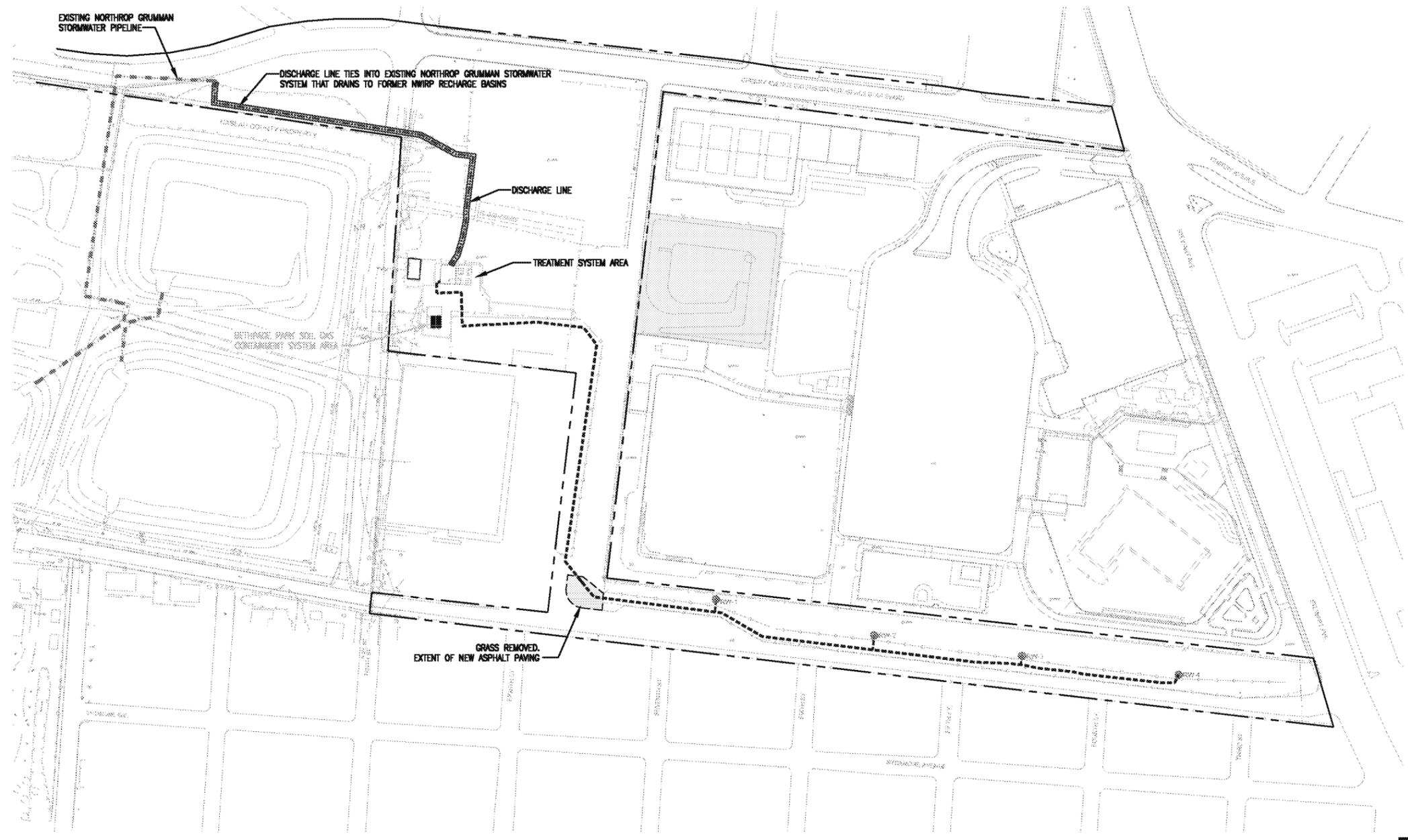
SOURCE: USGS 7.5 MIN AMITYVILLE QUADRANGLE, AMITYVILLE, N.Y., 1994, FREEPORT QUADRANGLE, FREEPORT, N.Y., 1994, HICKSVILLE QUADRANGLE, HICKSVILLE, N.Y., 1967, PHOTOREVISED 1979, HUNTINGTON, N.Y., 1967, PHOTOREVISED 1979



| | |
|--|---|
| BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM OPERABLE UNIT 3 (FORMER GRUMMAN SETTLING PONDS) BETHPAGE, NEW YORK | |
| SITE LOCATION | |
| | Design & Consultancy for natural and built assets |
| FIGURE 1 | |

CITY:SYRACUSE,NY DIV:GROUP:ENV DBA:SANCHEZ LD:AS PIC:OPT) TM:(Opt) LVR:(Opt)ON:"OFF"REF
 C:\Users\asanchez\OneDrive - ARCADIS\BIM 360 Docs\NORTHROP GRUMMAN\01\MI\NY-488\01.DWG LAYOUT:2 SAVED: 8/16/2018 1:24 PM ACADVER: 21.05 (LMS TECH) PAGES: 21 PLOTTED: 8/16/2018 1:24 PM BY: SANCHEZ, ADRIAN

PROJECTNAME: X:\148\100 X-ONSITE-BASE SITE



- LEGEND:**
- NORTHROP GRUMMAN PROPERTY LINE
 - - - - - FENCE
 - o o o BITUMINOUS PAVEMENT
 - - - - - INFLUENT PIPELINE AND ELECTRICAL CONDUITS
 - ==== EFFLUENT PIPELINE
 - - - - - EXISTING NORTHROP GRUMMAN STORMWATER PIPELINE
 - PSW-4
 - NWIRP
 - REMEDIAL WELL
 - NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NOW OWNED BY NASSAU COUNTY)

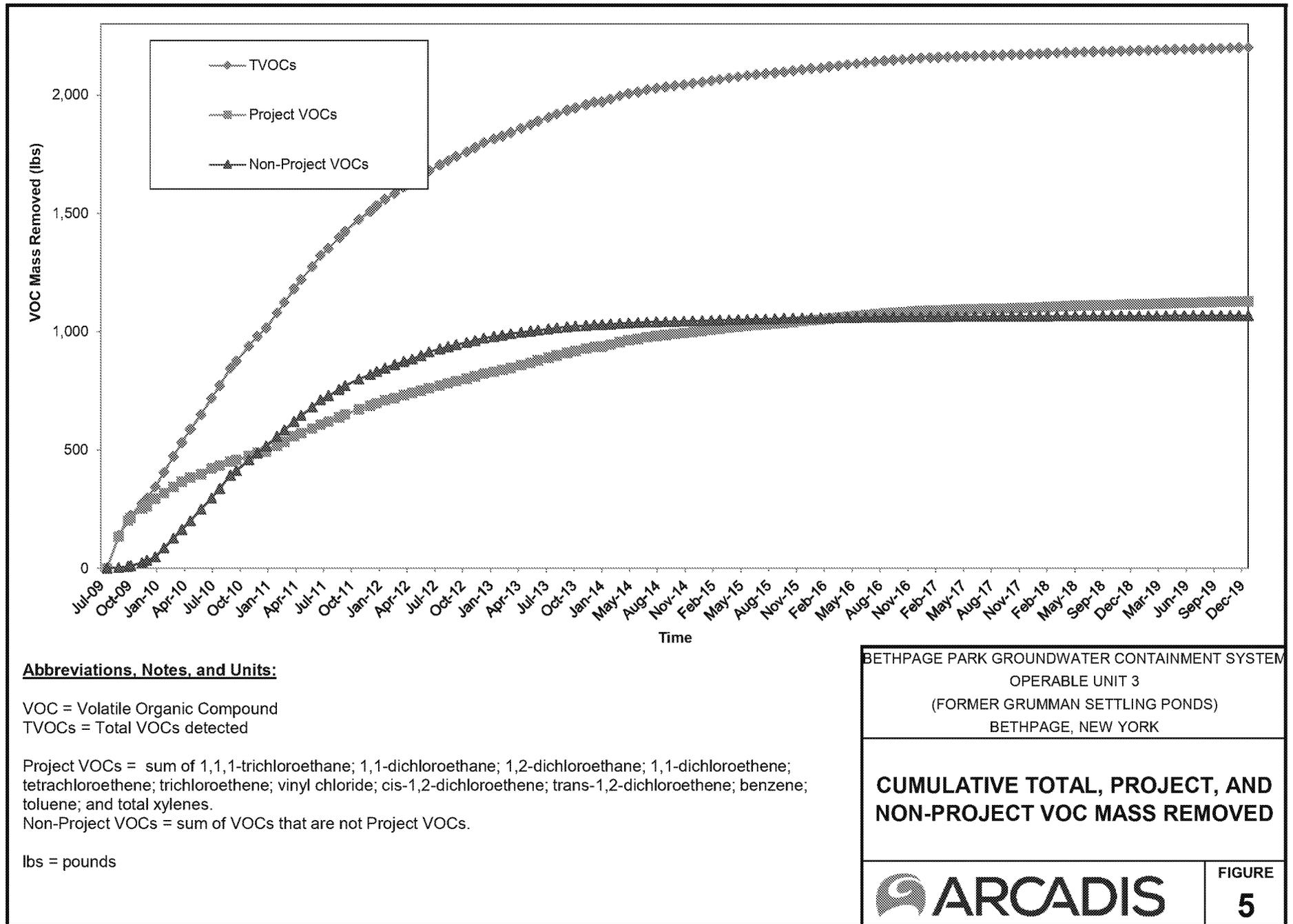


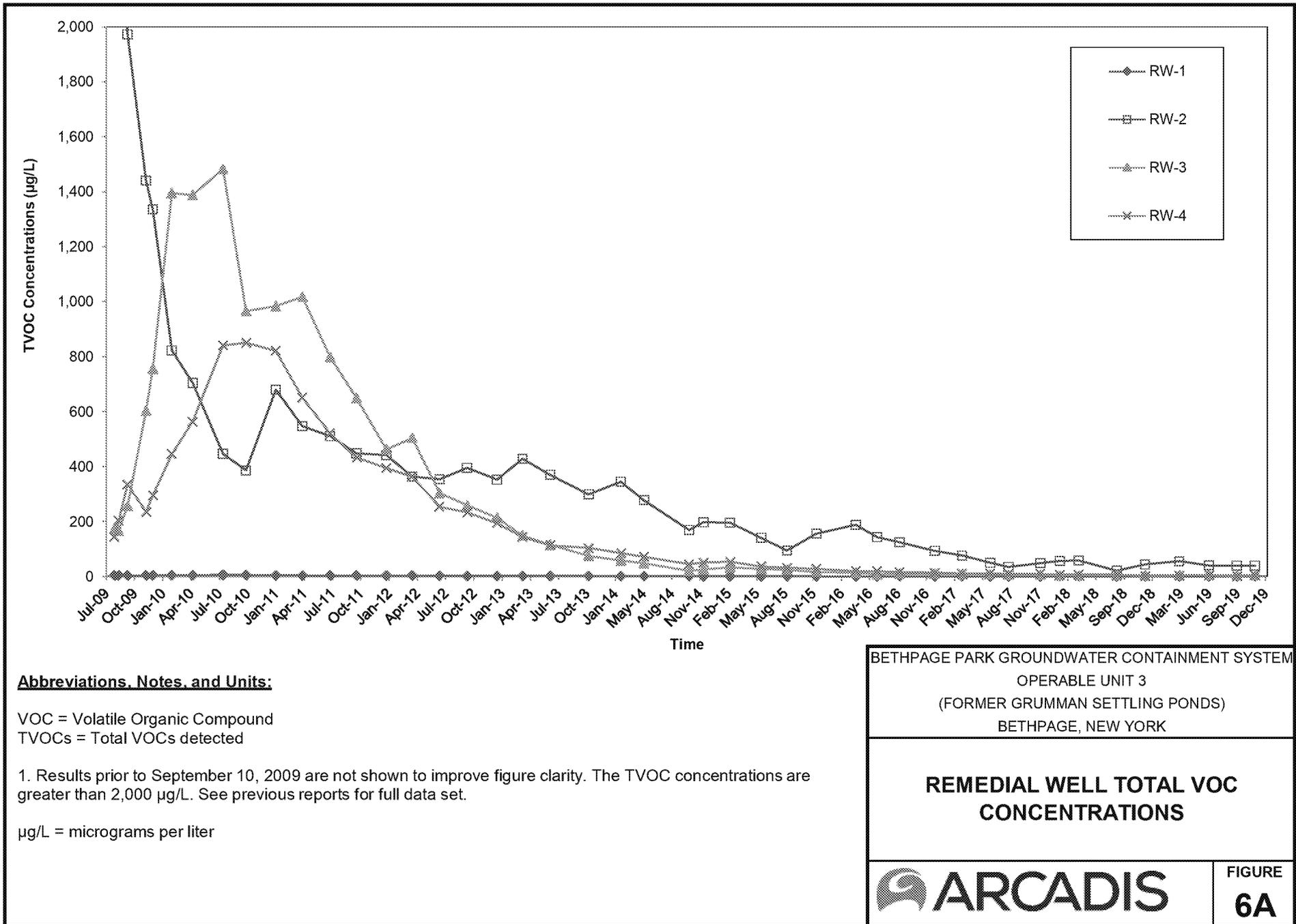
BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
 OPERABLE UNIT 3
 (FORMER GRUMMAN SETTLING PONDS)
 BETHPAGE, NEW YORK

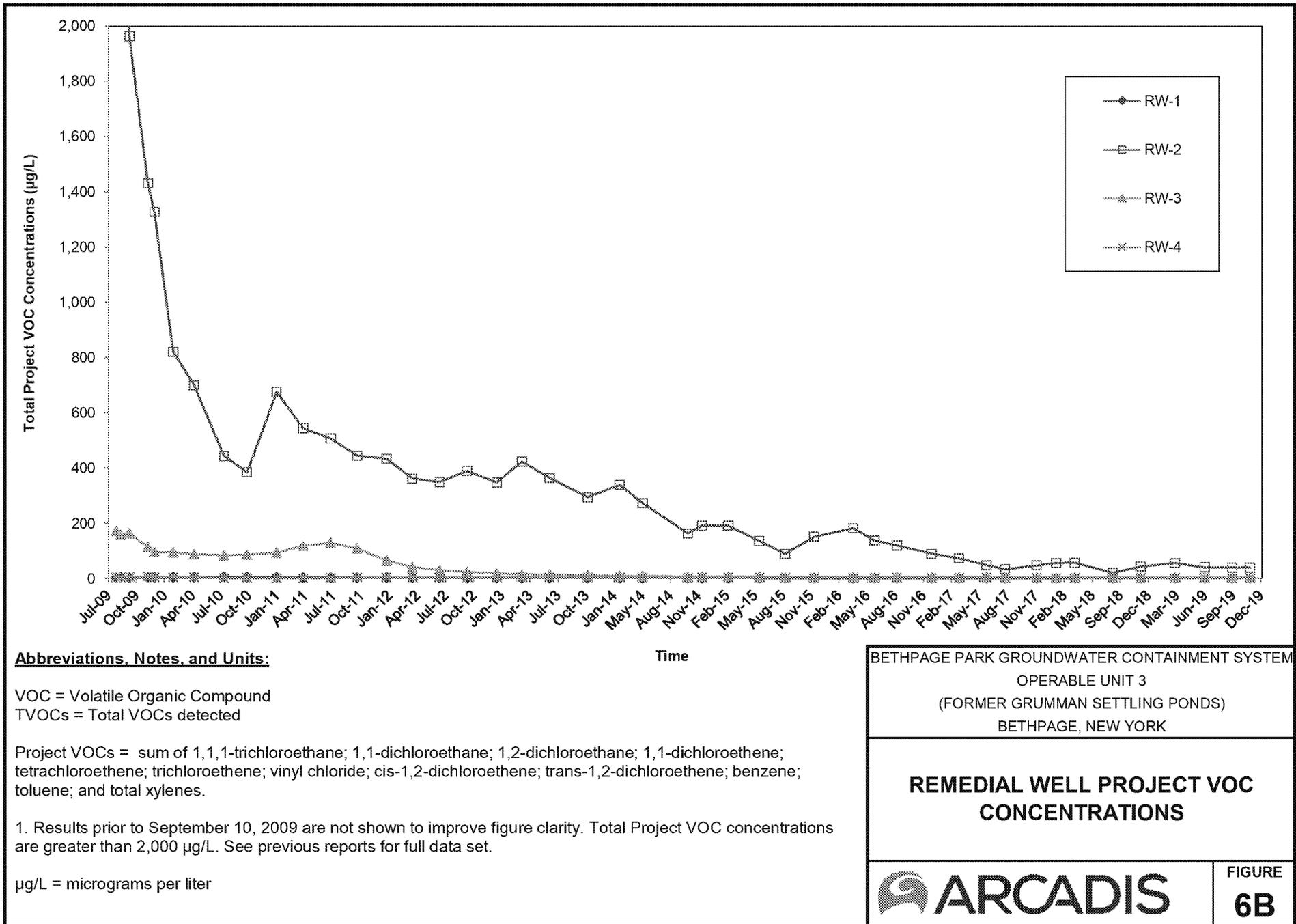
**SITE AND
 GROUNDWATER CONTAINMENT SYSTEM**



FIGURE
2







BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
 OPERABLE UNIT 3
 (FORMER GRUMMAN SETTLING PONDS)
 BETHPAGE, NEW YORK

REMEDIAL WELL PROJECT VOC CONCENTRATIONS

ARCADIS **FIGURE 6B**

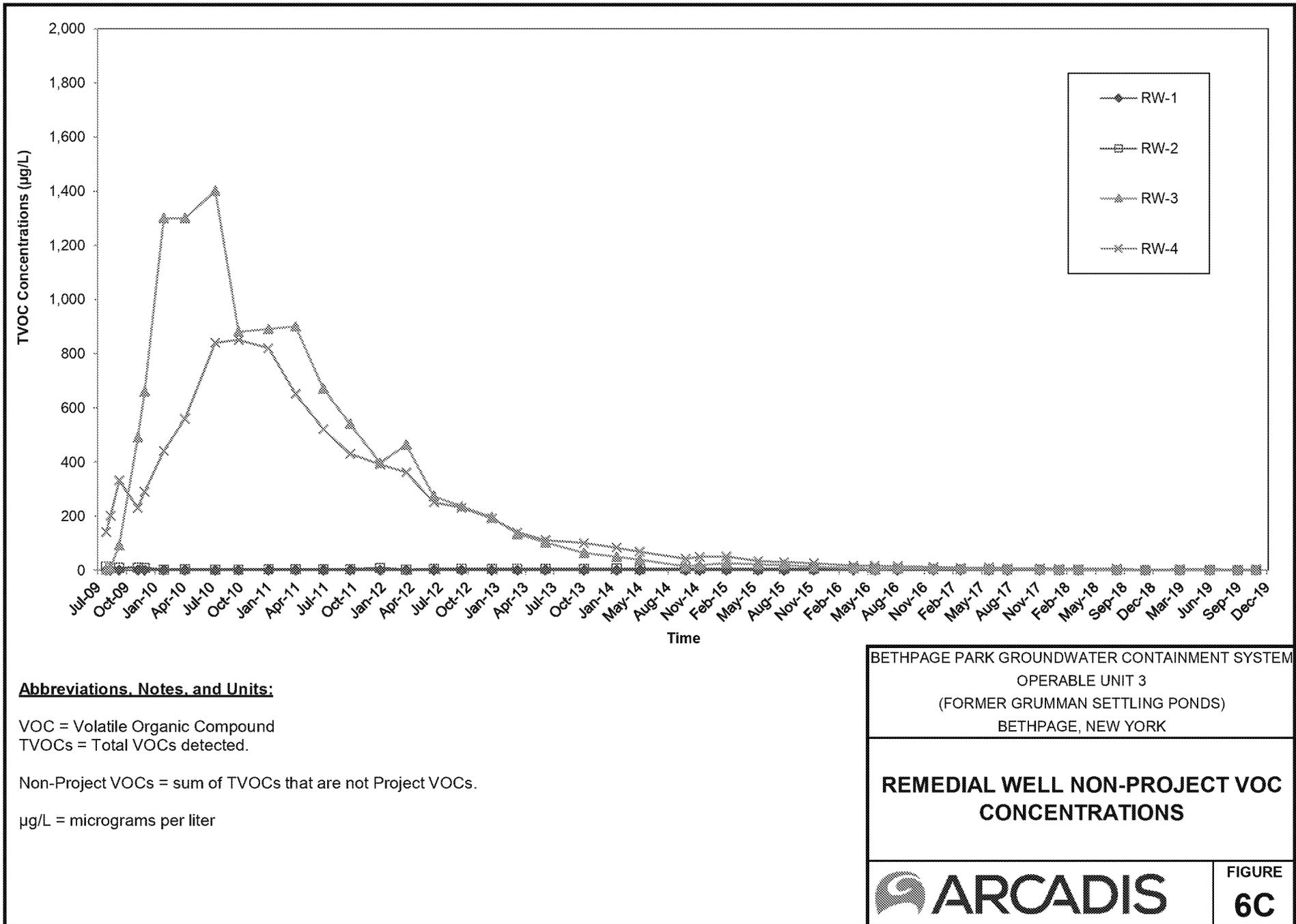
Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound
 TVOCs = Total VOCs detected

Project VOCs = sum of 1,1,1-trichloroethane; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethene; tetrachloroethene; trichloroethene; vinyl chloride; cis-1,2-dichloroethene; trans-1,2-dichloroethene; benzene; toluene; and total xylenes.

1. Results prior to September 10, 2009 are not shown to improve figure clarity. Total Project VOC concentrations are greater than 2,000 µg/L. See previous reports for full data set.

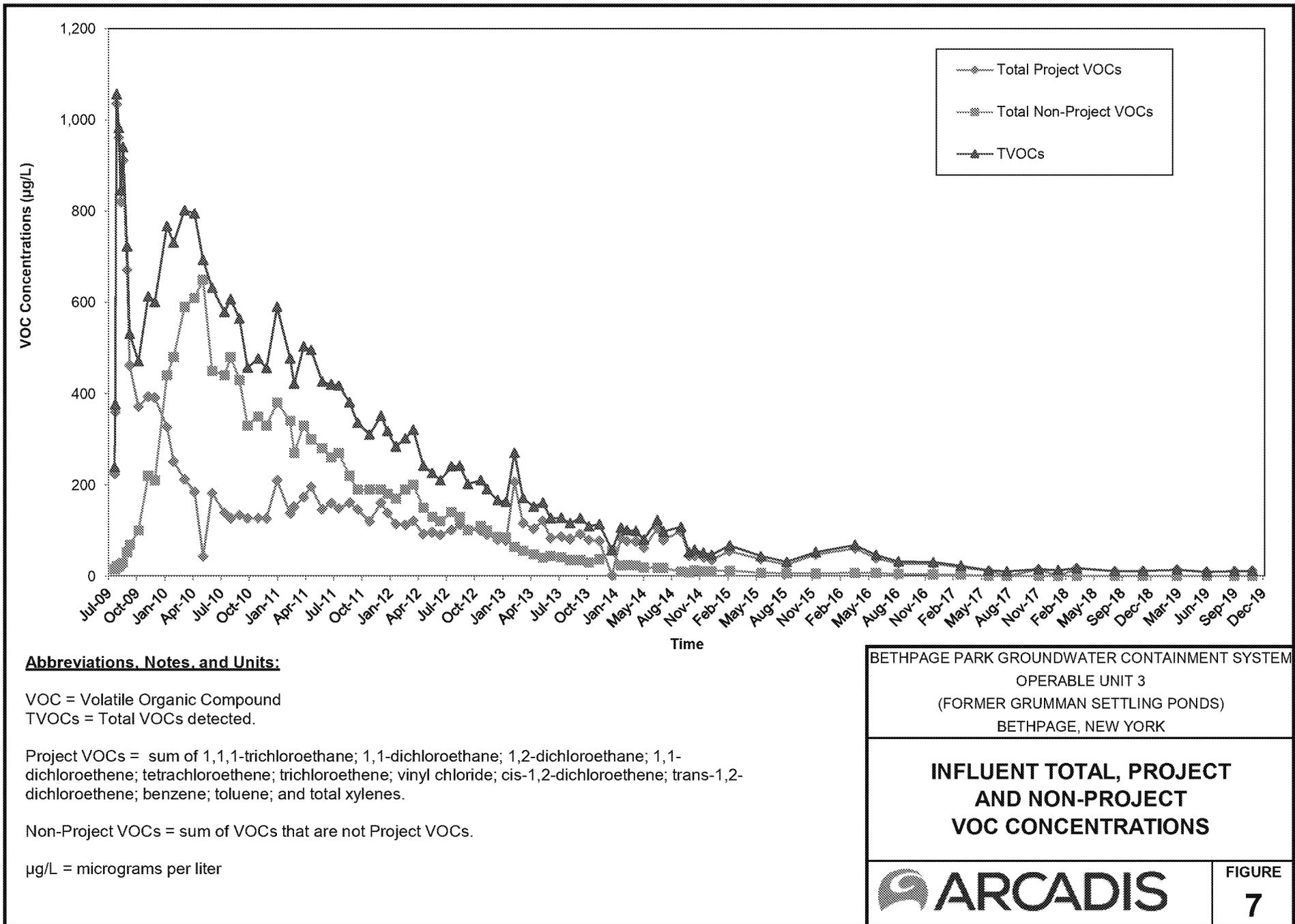
µg/L = micrograms per liter

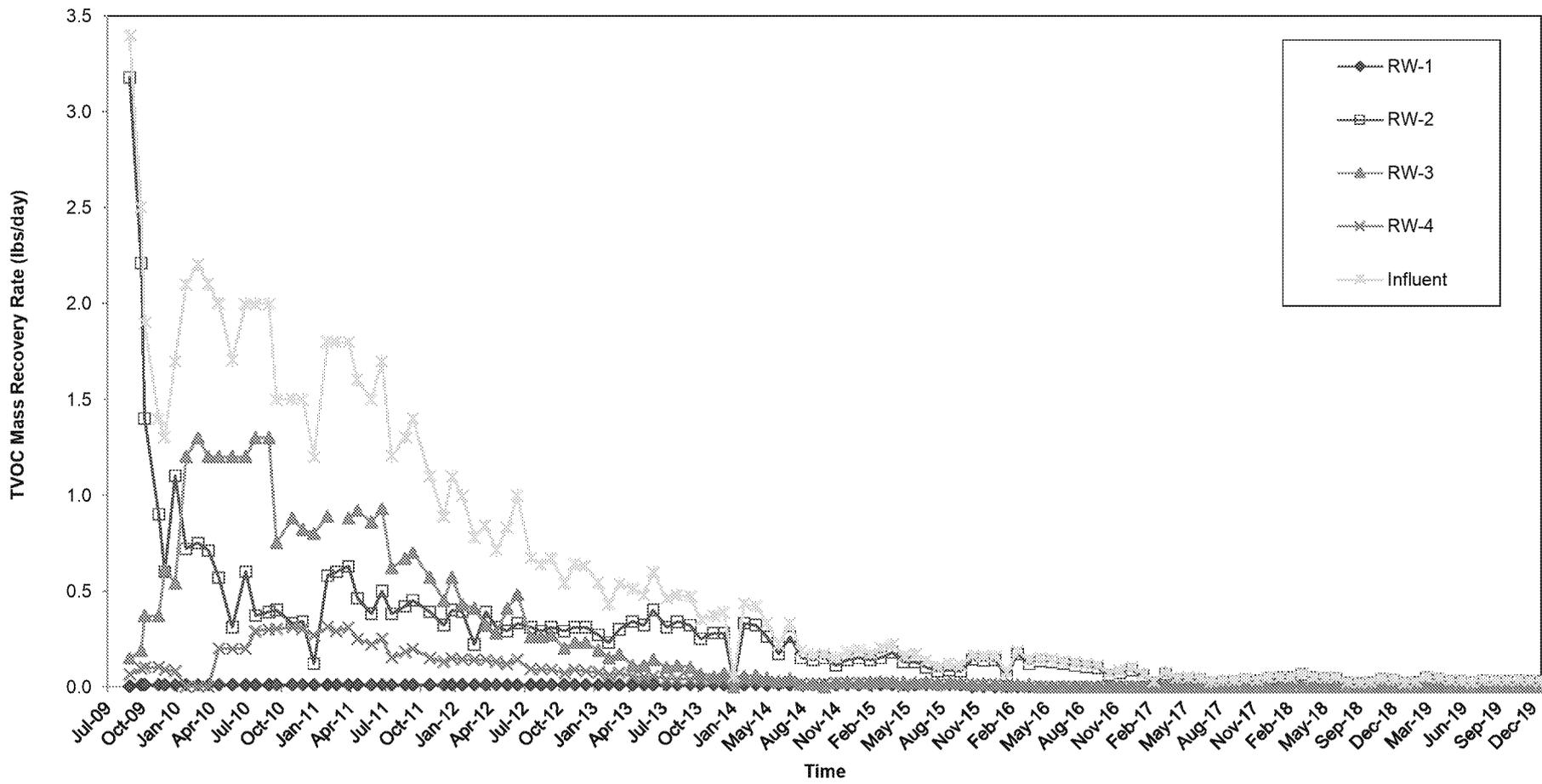


BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
 OPERABLE UNIT 3
 (FORMER GRUMMAN SETTLING PONDS)
 BETHPAGE, NEW YORK

REMEDIAL WELL NON-PROJECT VOC CONCENTRATIONS

ARCADIS **FIGURE 6C**



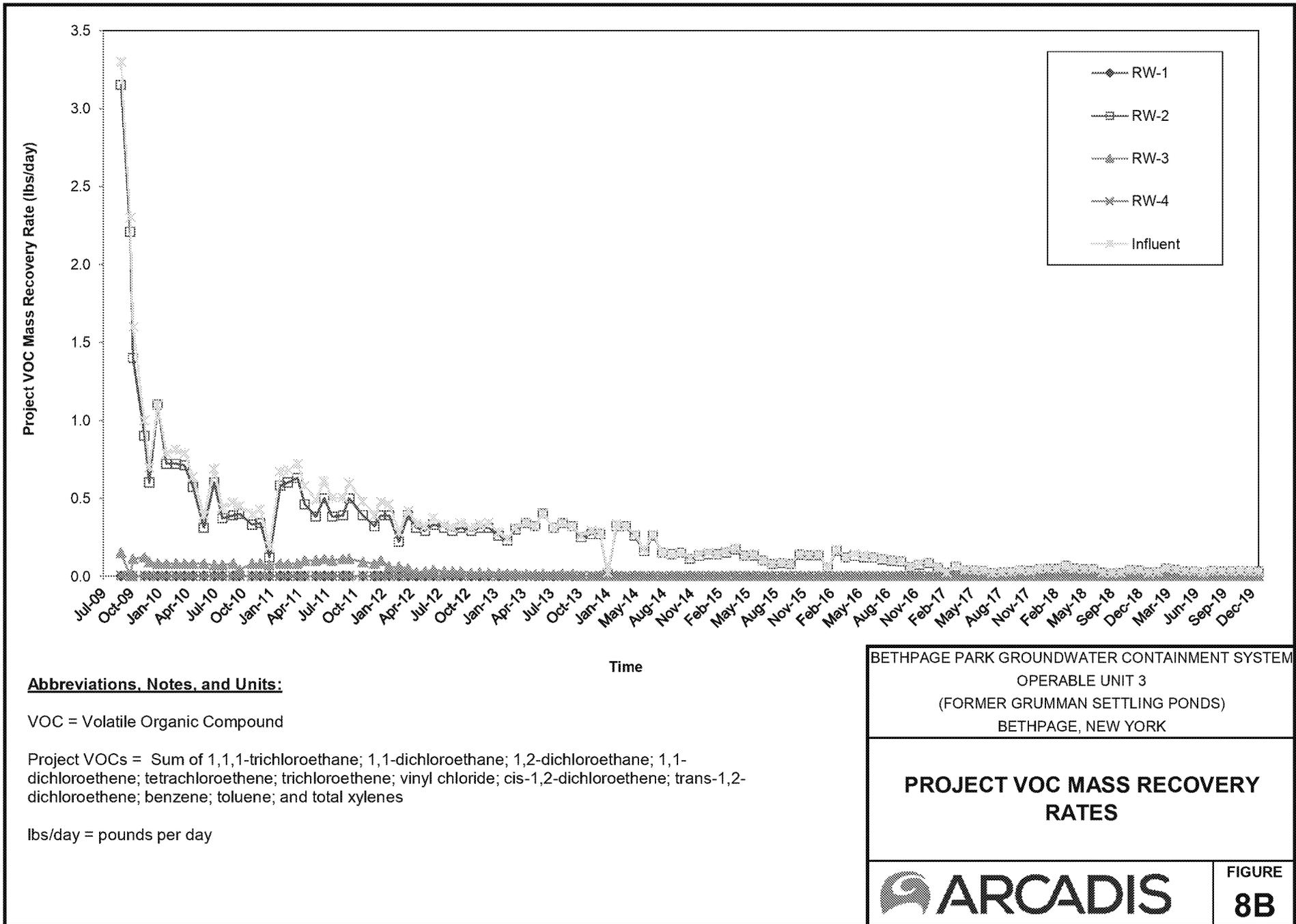


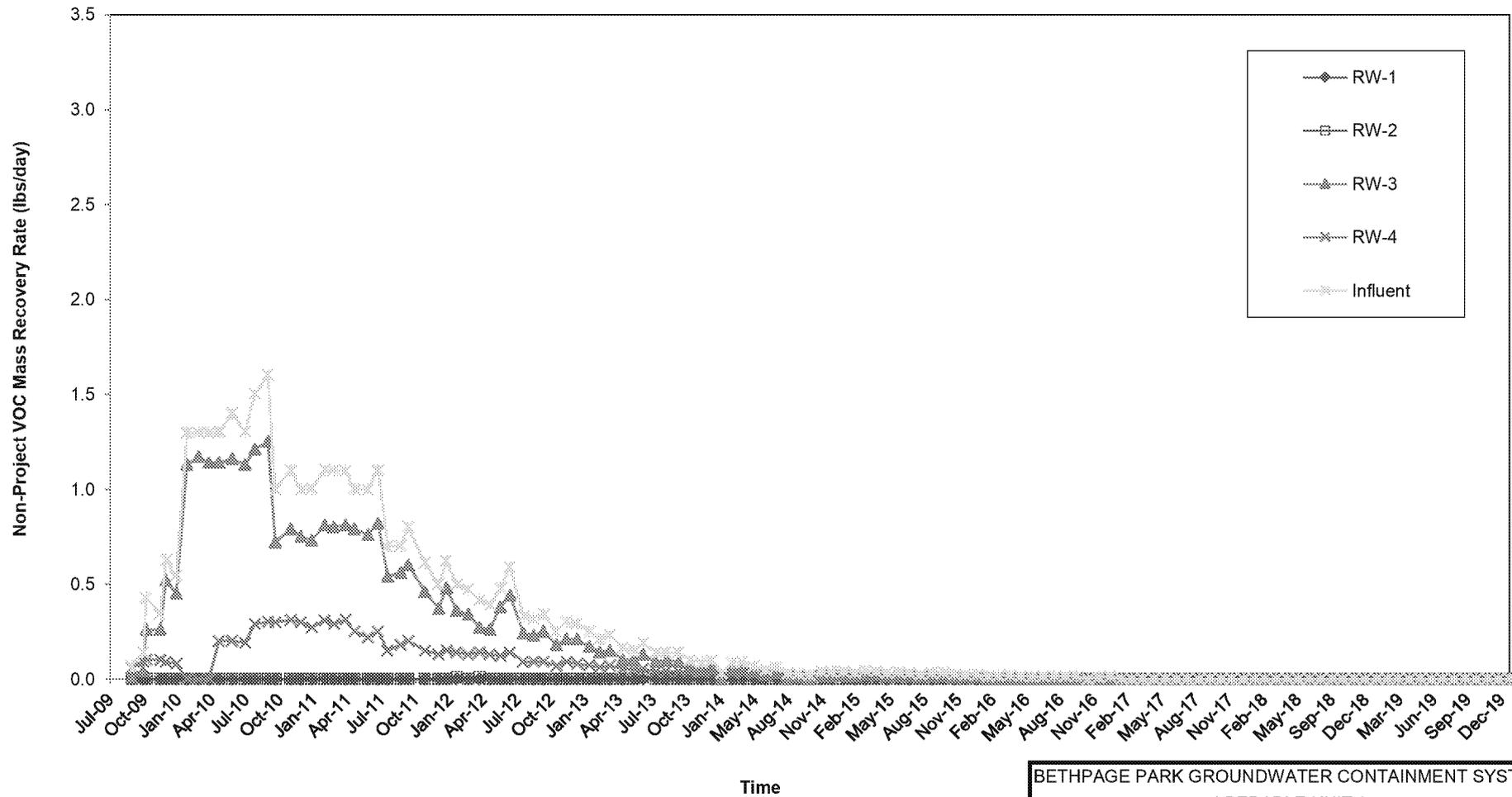
Abbreviation, Notes, and Units:

VOC = Volatile Organic Compound
 TVOCs = Total VOCs detected

lbs/day = pounds per day

| | |
|--|---------------------|
| BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM OPERABLE UNIT 3 (FORMER GRUMMAN SETTLING PONDS) BETHPAGE, NEW YORK | |
| TOTAL VOC MASS RECOVERY RATES | |
| | FIGURE 8A |





Abbreviations, Notes, and Units:

VOC = Volatile Organic Compound

Non-Project VOCs = sum of VOCs that are not Project VOCs.

lbs/day = pounds per day

BETHPAGE PARK GROUNDWATER CONTAINMENT SYSTEM
 OPERABLE UNIT 3
 (FORMER GRUMMAN SETTLING PONDS)
 BETHPAGE, NEW YORK

NON-PROJECT VOC MASS RECOVERY RATES



FIGURE
8C

APPENDIX A

Well Construction Information and Environmental Effectiveness Monitoring Program



Appendix A
 Well Construction Information and Environmental Effectiveness Monitoring Program
 Bethpage Park Groundwater Containment System
 Operable unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York

| Well ID | Well Diameter (Inches) | Depth to Screen | | Screen Length (ft) | Well Depth (ft) | Well Materials | Water Levels ⁽²⁾ | MONITORING ACTIVITY | | | |
|--------------------------------------|------------------------|-----------------|-----------------|--------------------|-----------------|-----------------|-----------------------------|------------------------------------|------------|-----------------|----------|
| | | Top (ft bls) | Bottom (ft bls) | | | | | WATER QUALITY ⁽⁴⁾ | | | |
| | | | | | | | | VOC | SVOC | Cd/Cr | Fe/Mn |
| Monitoring Wells | | | | | | | | | | | |
| BCPMW-1 | 2 | 50 | 65 | 15 | 65 | Sch. 40 PVC | Quarterly | Baseline | -- | Baseline | -- |
| BCPMW-2 | 2 | 60 | 75 | 15 | 75 | Sch. 40 PVC | Quarterly | Baseline | -- | Baseline | Baseline |
| BCPMW-3 | 2 | 59 | 74 | 15 | 74 | Sch. 40 PVC | Quarterly | Baseline | -- | Baseline | Baseline |
| BCPMW-4-1 | 4 | 45 | 65 | 20 | 70 | Sch. 40 PVC | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | Baseline |
| BCPMW-4-2 | 4 | 68.5 | 83.5 | 15 | 88.5 | Sch. 40 PVC | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | Baseline |
| BCPMW-4-3 | 4 | 115 | 125 | 10 | 130 | Sch. 40 PVC | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | Baseline |
| BCPMW-5-1 | 4 | 50 | 65 | 15 | 70 | Sch. 80 PVC/ SS | Quarterly | Baseline | -- | Baseline | Baseline |
| BCPMW-6-1 | 4 | 88.5 | 98.5 | 10 | 103.5 | Sch. 40 PVC | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| BCPMW-6-2 | 4 | 133 | 143 | 10 | 148 | Sch. 40 PVC | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| BCPMW-7-1 | 4 | 90 | 100 | 10 | 105 | Sch. 40 PVC | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| B24MW-2 | 2 | 54 | 74 | 20 | 74 | PVC | Quarterly | Baseline/Annual | Annual | Baseline | -- |
| B24MW-3 | 2 | 55 | 70 | 15 | 70 | PVC | Quarterly | Baseline/Annual | Annual | Baseline | -- |
| B30MW-1 | 2 | 57 | 72 | 15 | 72 | PVC | Quarterly | Baseline/Annual | Annual | Baseline | -- |
| MW-200-1 | 4 | 85 | 95 | 10 | 100 | Sch. 40 PVC/ SS | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| MW-201-1 | 4 | 70 | 80 | 10 | 85 | Sch. 40 PVC/ SS | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| MW-202-1 | 4 | 125 | 135 | 10 | 140 | Sch. 40 PVC/ SS | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| MW-203-1 | 4 | 103 | 113 | 10 | 118 | Sch. 40 PVC/ SS | Quarterly | Baseline/Semiannual ⁽⁵⁾ | Semiannual | Baseline/Annual | -- |
| MW-204-1 | 4 | 80 | 90 | 10 | 95 | Sch. 40 PVC/ SS | Quarterly | Annual | Annual | -- | -- |
| MW-205-1 ⁽⁶⁾ | 4 | 65 | 75 | 10 | 80 | Sch. 40 PVC/ SS | Quarterly | Annual | Annual | -- | -- |
| MW-206-1 ⁽⁶⁾ | 4 | 120 | 130 | 10 | 135 | Sch. 40 PVC/ SS | Quarterly | Annual | Annual | -- | -- |
| MW-207A-1R ⁽⁷⁾ | 4 | 120 | 130 | 10 | 135 | Sch. 40 PVC/ SS | Quarterly | Annual | Annual | -- | -- |
| MW-207B-1R ⁽⁷⁾ | 4 | 210 | 220 | 10 | 225 | Sch. 40 PVC/ SS | Quarterly | Annual | Annual | -- | -- |
| MW-208-1 ⁽⁶⁾ | 4 | 80 | 90 | 10 | 92 | Sch. 40 PVC/ SS | Quarterly | Annual | Annual | -- | -- |
| Remedial Wells ⁽⁴⁾ | | | | | | | | | | | |
| RW-01 | 8 | 108 | 128 | 20 | 134 | Sch. 80 PVC/SS | Quarterly | Baseline/Quarterly | Quarterly | Baseline/Annual | -- |
| RW-02 | 6 | 84 | 104 | 20 | 104 | Steel/SS | Quarterly | Baseline/Quarterly | Quarterly | Baseline/Annual | -- |
| RW-03 | 8 | 84 | 104 | 20 | 107 | Sch. 80 PVC/SS | Quarterly | Baseline/Quarterly | Quarterly | Baseline/Annual | -- |
| RW-04 | 8 | 110 | 130 | 20 | 133 | Sch. 80 PVC/SS | Quarterly | Baseline/Quarterly | Quarterly | Baseline/Annual | -- |

Notes and Abbreviations on Last Page

Appendix A
 Well Construction Information and Environmental Effectiveness Monitoring Program
 Bethpage Park Groundwater Containment System
 Operable unit 3 (Former Grumman Settling Ponds)
 Bethpage, New York



| Well ID | Well Diameter (Inches) | Depth to Screen | | Screen Length (ft) | Well Depth (ft) | Well Materials | Water Levels ⁽²⁾ | MONITORING ACTIVITY | | | |
|-----------------------|------------------------|-----------------|-----------------|--------------------|-----------------|----------------|-----------------------------|------------------------------|------|-------|-------|
| | | Top (ft bls) | Bottom (ft bls) | | | | | WATER QUALITY ⁽⁴⁾ | | | |
| | | | | | | | | VOC | SVOC | Cd/Cr | Fe/Mn |
| Piezometers | | | | | | | | | | | |
| PZ-01a | 2 | 60 | 65 | 5 | 68 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-01b | 1 | 80 | 85 | 5 | 88 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-01c | 1 | 130 | 135 | 5 | 138 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-02a | 2 | 60 | 65 | 5 | 68 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-02b | 1 | 80 | 85 | 5 | 85 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-02c | 1 | 130 | 135 | 5 | 138 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-03 | 1 | 80 | 85 | 5 | 88 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-04 | 1 | 80 | 85 | 5 | 88 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-05a | 2 | 65 | 70 | 5 | 74 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-05b | 1 | 110 | 115 | 5 | 117 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-05c ⁽⁶⁾ | 2 | 130 | 135 | 5 | 138 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-06a | 2 | 65 | 70 | 5 | 72 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-06b | 1 | 90 | 95 | 5 | 97 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-07a | 2 | 65 | 70 | 5 | 72 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-07b | 1 | 113 | 118 | 5 | 120 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-08a ⁽⁶⁾ | 2 | 60 | 65 | 5 | 68 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-08b ⁽⁶⁾ | 2 | 80 | 85 | 5 | 88 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-08c ⁽⁶⁾ | 2 | 130 | 135 | 5 | 138 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-09a ⁽⁶⁾ | 2 | 57 | 62 | 5 | 67 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |
| PZ-10a ⁽⁶⁾ | 2 | 65 | 70 | 5 | 75 | Sch. 40 PVC | Quarterly | -- | -- | -- | -- |

Notes and Abbreviations on Last Page

Notes and Abbreviations:

- (1) Water samples will be collected and analyzed in accordance with the method and procedures described in the BPGWCS OM&M Manual (Arcadis 2016) .
- (2) Approximate locations of the wells and piezometers in the OU3 BPGWCS Monitoring Program are shown in Figure 4.
- (3) Water Levels will be measured in all wells/piezometers during the baseline monitoring event in accordance with the procedures presented in the BPGWCS OM&M Manual (Arcadis 2016) .
- (4) See BPGWCS OM&M Manual (Arcadis 2016) for details of water quality analysis.
- (5) Semiannual wells will be monitored annually after Year 1.
- (7) Wells installed by ERM in 2015.
- (8) Wells installed by EMAGIN in 2017.

Sch. 80 PVC: schedule 80 polyvinyl chloride

Sch. 40 PVC: schedule 40 polyvinyl chloride

BPGWCS: Bethpage Park Groundwater Containment System

SS: stainless steel

Steel: low carbon steel

ft: feet

ft bls: feet below land surface

Table 2. Remedial System Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3
 (Former Grumman Settling Ponds), Northrop Grumman Systems, Corporation, Bethpage, New York. ⁽¹⁾

| Sample Location/Instrument ⁽¹⁾ | Parameter (Method) ⁽²⁾ | Frequency | |
|--|-----------------------------------|--------------------------|---------------------------|
| | | Long-Term ⁽³⁾ | SCADA Data Acquisition |
| <u>Water Samples</u> ⁽⁴⁾ | | | |
| Remedial Well 1 (WSP-1) | VOCs (USEPA 8260) | Quarterly | NA |
| | Iron (USEPA 6010) | Annually | NA |
| | 1,4-Dioxane (USEPA 8270) | Quarterly | NA |
| Remedial Well 2 (WSP-2) | VOCs (USEPA 8260) | Quarterly | NA |
| | Iron (USEPA 6010) | Annually | NA |
| | 1,4-Dioxane (USEPA 8270) | Quarterly | NA |
| Remedial Well 3 (WSP-3) | VOCs (USEPA 8260) | Quarterly | NA |
| | Iron (USEPA 6010) | Annually | NA |
| | 1,4-Dioxane (USEPA 8270) | Quarterly | NA |
| Remedial Well 4 (WSP-4) | VOCs (USEPA 8260) | Quarterly | NA |
| | Iron (USEPA 6010) | Annually | NA |
| | 1,4-Dioxane (USEPA 8270) | Quarterly | NA |
| Air Stripper Influent (WSP-5) | VOCs (USEPA 8260) | Quarterly | NA |
| | Iron (USEPA 6010) | Quarterly | NA |
| | 1,4-Dioxane (USEPA 8270) | Quarterly | NA |
| Air Stripper Effluent (WSP-6) | Iron (USEPA 6010) | As Needed | NA |
| Plant Effluent (WSP-7) | VOCs (USEPA 8260) | Monthly | NA |
| | 1,4-Dioxane (USEPA 8270) | Monthly | NA |
| | Iron (USEPA 6010) | Monthly | NA |
| | ph (field) | Monthly | NA |
| | Mercury | Monthly | NA |
| <u>Air Samples</u> ^{(4) (5)} | | | |
| Air Stripper Effluent/ECU-1 Influent (VSP-1) | VOCs (TO-15 Modified) | Quarterly | NA |
| ECU-1 Effluent/ECU-2 Influent (VSP-2) | VOCs (TO-15 Modified) | As Needed | NA |
| ECU-2 Effluent/ECU-3 Influent (VSP-3) | VOCs (TO-15 Modified) | As Needed | NA |
| ECU-3 Effluent/ECU-4 Influent (VSP-4) | VOCs (TO-15 Modified) | As Needed | NA |
| Total Effluent (VSP-5) | VOCs (TO-15 Modified) | Quarterly | NA |

Table 2. Remedial System Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3
 (Former Grumman Settling Ponds), Northrop Grumman Systems, Corporation, Bethpage, New York. ⁽¹⁾

| Sample Location/Instrument ⁽¹⁾ | Parameter (Method) ⁽²⁾ | Frequency | |
|--|-----------------------------------|--------------------------|---------------------------|
| | | Long-Term ⁽³⁾ | SCADA Data Acquisition |
| <u>Water Flow Measurements</u> | | | |
| Remedial Well RW-1 (FT - 110) | Flow rate (gpm + total gal.) | Weekly | Continuously |
| Remedial Well RW-2 (FT - 120) | Flow rate (gpm + total gal.) | Weekly | Continuously |
| Remedial Well RW-3 (FT - 130) | Flow rate (gpm + total gal.) | Weekly | Continuously |
| Remedial Well RW-4 (FT - 140) | Flow rate (gpm + total gal.) | Weekly | Continuously |
| Combined Influent (FR - 200) | Flow rate (gpm + total gal.) | Weekly | Continuously |
| System Effluent (FT-700) | Flow rate (gpm + total gal.) | Weekly | Continuously |
| <u>Air Flow Measurements</u> | | | |
| Air Stripper Effluent (FT-500) | Flow rate (SCFM) | Weekly | Continuously |
| <u>Water Pressure Measurements</u> | | | |
| Remedial Well RW-1 (PT - 110) | Pressure (i.w.g.) | Weekly | Continuously |
| Remedial Well RW-2 (PT - 120) | Pressure (i.w.g.) | Weekly | Continuously |
| Remedial Well RW-3 (PT - 130) | Pressure (i.w.g.) | Weekly | Continuously |
| Remedial Well RW-4 (PT - 140) | Pressure (i.w.g.) | Weekly | Continuously |
| Air Stripper Effluent (PT-700) | Pressure (i.w.g.) | Weekly | Continuously |
| <u>Air Temperature & Relatively Humidity Measurements</u> | | | |
| Air Stripper Effluent (TT-500) | Temperature | Weekly | Continuously |
| ECU Mid-Train (TI-503) | Temperature | Weekly | NA |
| Effluent (TI-603) | Temperature | Weekly | NA |

Table 2. Remedial System Monitoring Program, Bethpage Park Groundwater Containment System, Operable Unit 3 (Former Grumman Settling Ponds), Northrop Grumman Systems, Corporation, Bethpage, New York. ⁽¹⁾

| Sample Location/Instrument ⁽¹⁾ | Parameter (Method) ⁽²⁾ | Frequency | |
|---|-----------------------------------|--------------------------|------------------------|
| | | Long-Term ⁽³⁾ | SCADA Data Acquisition |
| <i>Air Pressure Measurements</i> | | | |
| Air Stripper Effluent (PT-500) | Pressure (i.w.g.) | Quarterly | Continuously |
| ECU #1 Influent (PI-501) | Pressure (i.w.g.) | Quarterly | NA |
| ECU #2 Influent (PI-502) | Pressure (i.w.g.) | Quarterly | NA |
| ECU #3 Influent (PI-601) | Pressure (i.w.g.) | Quarterly | NA |
| ECU #4 Influent (PI-602) | Pressure (i.w.g.) | Quarterly | NA |
| System Effluent (PI-603) | Pressure (i.w.g.) | Quarterly | NA |

Notes:

- (1) Refer to Appendix E of the Operation, Maintenance and Monitoring Manual for a diagram showing referenced sample locations and measurement points.
- (2) Parameters/methods may be modified based on review of short-term and/or long-term testing results. Parameters shown in **Bold** indicate parameters that require NYSDEC notification/approval prior to change in monitoring schedule.
- (3) Long-term schedule is tentative. Modification may be required/recommended based on the results of water quality trends.
- (4) Samples will be analyzed in accordance with the methods and procedures described in the Sampling and Analysis Plan.
- (5) Additional air samples will be collected to help calculate media usage rates and to help determine media changeout frequencies.

Acronyms:

| | | | |
|--------|----------------------------|--------|---|
| NA | Not applicable | NYSDEC | New York State Department of Environmental Conservation |
| ECU | Emissions control unit | EPA | U.S. Environmental Protection Agency |
| VOCs | Volatile organic compounds | SCADA | Supervisory Control And Data Acquisition |
| gal. | Gallons | | |
| gpm | Gallons per minute | | |
| i.w.g. | Inches water gauge | | |

APPENDIX B

Compliance and Performance Program



| Sample Location/Influent ⁽¹⁾ | Parameter (Method) ⁽²⁾ | Frequency | | | |
|--|--|---|--|--------------------------|---------------------------|
| | | Short-Term ⁽⁴⁾ | | Long-Term ⁽⁵⁾ | SCADA Data Acquisition |
| | | (First month) | (Five month period following first month) | | |
| Water Samples⁽⁹⁾ | | | | | |
| Remedial Well 1 (WSP-1) | VOCs (USEPA Method 8260C) | Bi-Weekly | Quarterly | Quarterly | NA |
| | Iron (USEPA 6010C) | Bi-Weekly | Annually | Annually | NA |
| | Cadmium and Chromium (USEPA 6010C) ⁽¹¹⁾ | | Annually | Annually | NA |
| | 1,4-Dioxane (USEPA Method 522) ⁽¹²⁾ | | Quarterly | Quarterly | NA |
| Remedial Well 2 (WSP-2) | VOCs (USEPA Method 8260C) | Bi-Weekly | Quarterly | Quarterly | NA |
| | Iron (USEPA 6010C) | Bi-Weekly | Annually | Annually | NA |
| | Cadmium and Chromium (USEPA 6010C) ⁽¹¹⁾ | | Annually | Annually | NA |
| | 1,4-Dioxane (USEPA Method 522) ⁽¹²⁾ | | Quarterly | Quarterly | NA |
| Remedial Well 3 (WSP-3) | VOCs (USEPA Method 8260C) | Bi-Weekly | Quarterly | Quarterly | NA |
| | Iron (USEPA 6010C) | Bi-Weekly | Annually | Annually | NA |
| | Cadmium and Chromium (USEPA 6010C) ⁽¹¹⁾ | | Annually | Annually | NA |
| | 1,4-Dioxane (USEPA Method 522) | | Quarterly | Quarterly | NA |
| Remedial Well 4 (WSP-4) | VOCs (USEPA Method 8260C) | Bi-Weekly | Quarterly | Quarterly | NA |
| | Iron (USEPA 6010C) | Bi-Weekly | Annually | Annually | NA |
| | Cadmium and Chromium (USEPA 6010C) ⁽¹¹⁾ | | Annually | Annually | NA |
| | 1,4-Dioxane (USEPA Method 522) ⁽¹²⁾ | | Quarterly | Quarterly | NA |
| Air Stripper Influent (WSP-5) | VOCs (USEPA Method 8260C) | 1-hr ⁽⁶⁾ ; Days 1, 3, & Weekly | Monthly | Quarterly | NA |
| | Iron (USEPA 6010C) | 1-hr ⁽⁶⁾ ; Days 1, 3, & Weekly | Monthly | Quarterly | NA |
| | 1,4-Dioxane (USEPA Method 522) ⁽¹²⁾ | | Quarterly | Quarterly | NA |
| Air Stripper Effluent (WSP-6) | Iron (USEPA 6010C) | 1-hr ⁽⁶⁾ ; As Needed | As Needed | As Needed | NA |
| Plant Effluent (WSP-7) | VOCs (USEPA Method 8260C and 624) ⁽¹³⁾ | 1-hr ⁽⁶⁾ ; Days 1, 3, & Weekly | Monthly | Monthly | NA |
| | Iron (USEPA 6010C) | 1-hr ⁽⁶⁾ ; Days 1, 3, & Weekly | Monthly | Monthly | NA |
| | Mercury (USEPA 7470A) ⁽⁷⁾ | 1-hr ⁽⁶⁾ ; Days 1, 3, & Weekly | Monthly | Monthly | NA |
| | 1,4-Dioxane (USEPA Method 522) ⁽¹²⁾ | | Monthly | Monthly | NA |
| | Cadmium and Chromium (USEPA 6010C) ⁽¹¹⁾ | | Quarterly | Quarterly | NA |
| | Total Nitrogen, Nitrate + Nitrite (USEPA Method 353.2) ⁽¹³⁾ | | Monthly | Monthly | NA |
| | TKN (USEPA Method 351.2) ⁽¹³⁾ | | Monthly | Monthly | NA |
| pH (field) ⁽⁸⁾ and | 1-hr ⁽⁶⁾ ; Days 1, 3, & Weekly | Quarterly | Quarterly | NA | |
| Air Samples^{(9) (10)} | | | | | |
| Air Stripper Effluent/ECU-1 Influent (VSP-1) | VOCs (TO-15 Modified) | Monthly | Monthly | Quarterly | NA |
| ECU-1 Effluent/ECU-2 Influent (VSP-2) | VOCs (TO-15 Modified) | As Needed | As Needed | As Needed | NA |
| ECU-2 Effluent/ECU-3 Influent (VSP-3) | VOCs (TO-15 Modified) | As Needed | As Needed | As Needed | NA |
| ECU-3 Effluent/ECU-4 Influent (VSP-4) | VOCs (TO-15 Modified) | As Needed | As Needed | As Needed | NA |
| Total Effluent (VSP-5) | VOCs (TO-15 Modified) | Monthly | Monthly | Quarterly | NA |

See notes on last page.

| Sample Location/Instrument ⁽¹⁾ | Parameter (Method) ⁽²⁾ | Frequency | | | | SCADA Data Acquisition |
|--|-----------------------------------|---------------------------|--|--------------------------|--------------|---------------------------|
| | | Short-Term ⁽³⁾ | | Long-Term ⁽⁴⁾ | | |
| | | (First month) | (Five month period following first month) | | | |
| <u>Water Flow Measurements</u> | | | | | | |
| Remedial Well RW-1 (FT - 110) | Flow rate (gpm + total gal.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Remedial Well RW-2 (FT - 120) | Flow rate (gpm + total gal.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Remedial Well RW-3 (FT - 130) | Flow rate (gpm + total gal.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Remedial Well RW-4 (FT - 140) | Flow rate (gpm + total gal.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Combined Influent (FR - 200) | Flow rate (gpm + total gal.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| System Effluent (FT-700) | Flow rate (gpm + total gal.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| <u>Air Flow Measurements</u> | | | | | | |
| Air Stripper Effluent (FT-500) | Flow rate (SCFM) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| <u>Water Pressure Measurements</u> | | | | | | |
| Remedial Well RW-1 (PT - 110) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Remedial Well RW-2 (PT - 120) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Remedial Well RW-3 (PT - 130) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Remedial Well RW-4 (PT - 140) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| Air Stripper Effluent (PT-700) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Weekly | Weekly | Continuously | |
| <u>Air Temperature & Relative Humidity Measurements</u> | | | | | | |
| Air Stripper Effluent (TT-500) | Temperature | Weekly | Weekly | Weekly | Continuously | |
| ECU Mid-Train (TI-503) | Temperature | Weekly | Weekly | Weekly | NA | |
| Effluent (TI-603) | Temperature | Weekly | Weekly | Weekly | NA | |
| <u>Air Pressure Measurements</u> | | | | | | |
| Air Stripper Effluent (PT-500) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Monthly | Quarterly | Continuously | |
| ECU #1 Influent (PI-501) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Monthly | Quarterly | NA | |
| ECU #2 Influent (PI-502) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Monthly | Quarterly | NA | |
| ECU #3 Influent (PI-601) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Monthly | Quarterly | NA | |
| ECU #4 Influent (PI-602) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Monthly | Quarterly | NA | |
| System Effluent (PI-603) | Pressure (i.w.g.) | (Daily -1st week) Weekly | Monthly | Quarterly | NA | |

See notes on last page.

Abbreviations, Notes and Units:

- (1) Refer to Figure 3 of this Operation, Maintenance, & Monitoring (OM&M) Report and Appendix E of the Groundwater IRM OM&M Manual (OM&M Manual (ARCADIS 2009)) for a diagram showing referenced sample locations and measurement points.
- (2) Parameters/methods may be modified based on review of short-term and/or long-term testing results. Parameters shown in **Bold** indicate parameters that require NYSDEC notification/approval prior to change in monitoring schedule.
- (3) Short-term schedule is tentative. Modification may be required/recommended based on the results of start-up and performance testing.
- (4) Long-term schedule is tentative. Modification may be required/recommended based on the results of short-term testing or water quality trends.
- (5) Water samples will be collected in accordance with the methods described in the Sampling and Analysis Plan, which is included as Appendix A of the OM&M Manual (ARCADIS 2009). Samples will be analyzed in accordance with the methods and procedures described in the Sampling and Analysis Plan.
- (6) Per NYSDEC request, a 1-hr pilot test was performed during system shake-down. The 1-hr pilot test samples were also analyzed for Mercury (Hg).
- (7) Per the interim treated effluent (water) discharge criteria provided in the NYSDEC letter dated March 19, 2009, select samples were analyzed for Mercury (Hg).
- (8) As authorized by the NYSDEC, the pH monitoring frequency was reduced from weekly to monthly beginning on February 8, 2010.
- (9) Air samples collected and analyzed in accordance with methods described in the Sampling and Analysis Plan, which is included as Appendix A of the OM&M Manual (ARCADIS 2009).
- (10) Additional air samples will be collected to help calculate media usage rates and to help determine media changeout frequencies.
- (11) Cadmium and Chromium analyses are part of the Environmental Effectiveness Monitoring Program (Table A-1) and the original discharge permit application. They are included here for consistency.
- (12) As of July 11 2018, 1,4-Dioxane is analyzed per USEPA Method 8270-SIM-CLLE.
- (13) As of November 2017, plant effluent was analyzed for permit equivalency Volatile Organic Compounds (VOCs) using USEPA Method 624; Total Nitrogen is calculated as the sum of Nitrogen, (Nitrate+Nitrite) and Total Kjeldahl Nitrogen (TKN), (CAS number: 14797-55-8, 14797-65-0, and 7727-37-9, respectively) by USEPA Methods 353.2 and 351.2, respectively; Total Iron and Manganese using USEPA Method 200.7.

| | |
|--------|---|
| ECU | Emissions Control Unit |
| EPA | U.S. Environmental Protection Agency |
| NA | Not Applicable |
| — | Not Required |
| NYSDEC | New York State Department of Environmental Conservation |
| OM&M | Operation, Maintenance and Monitoring |
| SCADA | Supervisory Control And Data Acquisition |
| SPDES | State Pollutant Discharge Elimination System |
| USEPA | United States Environmental Protection Agency |
| VOCs | Volatile Organic Compounds (refer Tables D-3 and D-5 in the Quality Assurance Project Plan (QAPP) (Appendix D of the OM&M Manual (ARCADIS 2009)) for the analyte lists for aqueous and air samples, respectively) |
| gal | gallons |
| gpm | gallons per minute |
| i.w.g. | inches water gauge |

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